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See pages 17, 18, 95, 97, 99 for notices of catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 118

THE OLD SHELL GAME

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City Planning, Housing, Public Works

City Plans Facilitate PWA Allotments

THAT the existence of carefully prepared city plans has enabled many municipalities to secure PWA allotments not otherwise obtainable, is attested in a letter to the editor of THE AMERICAN CITY under date of September 18, 1934, in reply to an inquiry addressed to Administrator Harold L. Ickes.

"A number of instances have come to our attention," writes Mr. Ickes, "definitely indicating that due to the efforts of active city planning boards and carefully prepared city plans, cities were enabled to obtain immediate action on definite, pre-considered projects, and within a relatively short time prepared a PWA application, whereas, without their city plan, the completion of necessary details might have required several months. Some of the cities to which I refer include Los Angeles, and Sacramento, Calif.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Rochester and Ithaca, N. Y.; Cincinnati and Cleveland, Ohio; Pittsburgh, Pa.; and Richmond, Va.

"More specifically, the work of the Regional Plan of New York and Its Environs has been very helpful in consideration of projects such as the Tri-Borough Bridge, the Midtown Hudson River Vehicular Tunnel, and various highway, parkway, water-supply and sanitation projects throughout the New York Region. The city plan of Washington, D. C., has facilitated proceeding with execution of the Mall Plan for the central composition of the city.

"Additional illustrations of PWA projects which have had the advantage of advance comprehensive planning would include the large water-supply and sewer projects in San Francisco City and County, Calif.; the water-supply and highway projects in Los Angeles City and County, Calif.; the sewer and viaduct projects in Columbus, Ohio; the water-supply project in Evanston, Ill., and the sewer projects in Chicago, Ill.; Milwaukee County, Mich,; and Yonkers, N. Y. Analysis of projects in the cities listed above would reveal similar instances."

Progress on PWA Housing and Slum Clearance Projects

SPEAKING at the ceremonies inaugurating the demolition of slum areas in Atlanta, Ga., on September 29, Public Works Administrator Harold L. Ickes said in part:

"We have met here today to do something that has never before been done in this country. As a representative of the Federal Government, I have come to Atlanta to take part in the demolition of a number of socially undesirable houses that constitute what we know as a slum area. For the first time in the history of our nation, the Federal Government has gone into a city, in response to pleas for help from its people, to aid in cleaning up a slum. Nation and municipality have engaged in a common enterprise for the welfare of Atlanta and as an example to all other cities in the country.

"We are about to clear out two slum areas so that we may build on these sites something new and better—low-cost housing projects available to people in the lowest-income classes at rents that will be within their ability to pay. Thus we are starting today in Atlanta, in this capital city of Georgia, on a program that will be carried out on a greater or lesser scale in many of the cities of our nation. . . .

"Perhaps some of you noticed in the newspapers last Tuesday the important step that has been taken in our slum clearance program in the city of Chicago. On that day the Government filed condemnation proceedings for an area covering 160 acres. The project will cost $12,500,000 when completed and will accommodate 3,000 families. Involved in this transaction are 1,009 separate parcels of land, without counting many miles of streets and alleys, which it is expected the city will vacate. This area is six or seven times larger than any prior assembling of land in the congested districts of Chicago. To acquire this property twenty-six separate condemnation suits were filed, involving a total of more than 10,000 defendants. It is the largest slum clearing project in the history of the country. It is the largest assemblage of land on record for such a purpose in the United States. The condemnation proceeding is the greatest lawsuit ever filed in any court in this country when the number of parties is considered.

"The $12,500,000 that this one project in Chicago will cost will represent one-half of the sum earmarked for slum clearance in that city. There will be two other projects, one of which, if we can acquire the necessary real estate at reasonable prices, will be, as is the case with one of your projects here in Atlanta, for Negroes. In addition to the two sites already acquired here in Atlanta and on which the work of clearing the land will start today, and the one in Chicago just referred to, we have acquired one in Cleveland. We have options on 90 per cent of a site we are buying in Indianapolis, and we are ready to start condemnation proceedings in Montgomery, Ala. Recently we came to an understanding with the Housing Authority in New York City with respect to our slum clearance program there, which will involve an additional expenditure of $25,000,000. In that city we are depending largely upon the local authorities to select and acquire the site. We are ready to proceed there just as soon as the necessary preliminary work has been done. There are still other communities in which we are quietly at work, but with respect to which no announcements will be available until certain matters have been satisfactorily disposed of."

Drastic Tax Limitation Law Precludes Federal Aid

THE AMERICAN CITY is glad to see the principle becoming established in Washington that preference will be given in Federal allotments for public works to cities in states which have not adopted needlessly drastic constitutional or statutory tax limitation laws. A case in point is the announcement on September 11 by Public Works Administrator Harold L. Ickes that because no assurance was available that the $1.50 tax limitation law of Indiana will be amended or repealed in the reasonably near future, two non-Federal allotments in Indiana have been rescinded. One of the rescinded allotments is a loan and grant of $145,000 awarded to East Chicago, Ind., for construction of five fire stations and renovizing the City Hall. The other is a loan and grant of $45,000 allotted to Rushville for additions and alterations to a high school building.

"Both allotments were made," says Mr. Ickes' statement, "on the condition that the Government will not undertake to advance funds unless the $1.50 tax limitation law was repealed or amended so funds could be transferred under the National Industrial Recovery Act. The bond contracts covering the two allotments contained this condition.

"The next regular session of the Indiana Legislature will convene on January 8, 1935, and it seems unlikely at this time that a special session will be convened before then. In view of the time that will elapse before the Legislature will be in session and the uncertainty as to whether the tax law will be amended when the Legislature is in session, PWA does not feel justified in long holding these recovery funds tied up at the disposal of the cities of East Chicago and Rushville. The national reemployment purposes of the PWA program require that funds be to projects which will not be subject to so much uncertainty.

"If the two cities are able to sell their bonds locally, they will be eligible for PWA grants of 30 per cent of the cost of labor and materials to be used on their projects. The City Attorney of East Chicago has been in Washington conferring with PWA officials, and has been assured that if a local bond sale was arranged an application for a grant would be given consideration if PWA had funds available for allotment at that time."

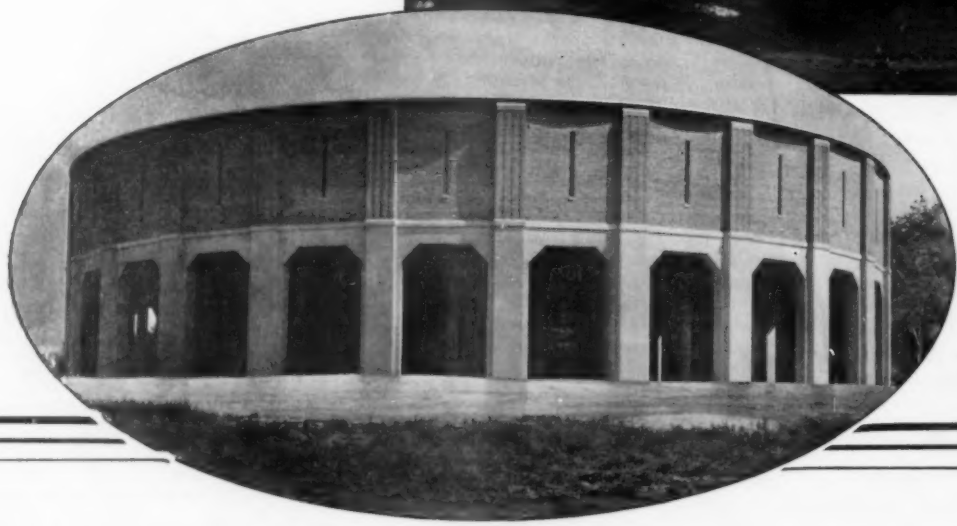
LARGE capacity with shallow DEPTH

During the last decade many medium-sized and large cities have taken advantage of elevated storage in their waterworks systems. The size of the system required large storage tanks.

To secure maximum benefits from elevated storage, the capacity should be contained within as narrow a range as possible. To meet this requirement, we build large tanks which are *shallow in depth.*

Some of these tanks having capacities ranging from 1,000,000 to 1,500,000 gals. capacity have a total range of only 25 ft. between the upper and lower water levels.

We also build standard ellipsoidal-bottom elevated tanks which give you the advantage of shallow depth for capacities up to 500,000 gals. Write our nearest office for information or estimating figures.



Above: 1,000,000-gal. elevated tank 125 ft. to bottom, at Newport News, Va. Left: 4,000,000 gal. tank at Sheboygan, Wis. This tank has a depth of only 20 ft., reducing the maximum variation in pressure to less than 10 lbs. between the upper and lower water levels.

B-404

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Water Supply and Purification

A New System of Meter Reading and Billing Installed

A NEW system of meter reading and billing was recently installed in Newton, Mass., and has entirely eliminated the peak loads on both the office and inspection forces, equalizing each month's work and thus enabling the Department to render prompt service on the investigation of complaints, which were greatly reduced owing to the uniformity of the intervals between readings.

The former system of reading meters and billing required that the meter reader or inspector should complete the reading of one complete ward before turning in his books. These ward books, of which there were seven, contained on the average 2,100 accounts each. The accounts, after being read, were computed in the office and the computations entered in a ledger book from which the bills and commitment were copied. This procedure required the making of three copies, one by hand and two typewritten. All services were charged an annual minimum advance rate, which was billed, together with any excess over the previous annual minimum, as of January 1. All meters were read semi-annually, and if water to the value of more than the minimum had been consumed by that time, an "excess" bill was rendered as of July 1. All excess water not so billed was charged on the subsequent annual bill rendered the first of the following year.

The system was confusing. It created two severe peak loads per year on the office organization, required the employment of temporary help, and overwhelmed the inspection force following each billing period with such a volume of work that many of the inquiries resultant from the receipt of unusually high bills could not be promptly investigated. As a result, the report lost much of its value on account of the change in conditions which might meanwhile have occurred and the long period required to read all the meters before the billing date, and the public was unable to coordinate its use of water with the bills rendered.

Careful study of the possibilities of developing a more satisfactory system of reading, billing and inspection revealed the fact that the two regular readers, properly routed, and a supervising inspector who should investigate the complaints, pick up missed readings and untangle any irregularities reported, would be ample to handle the routine work involved in reading all the 15,500 meters quarterly.

The city was consequently divided into three districts, and a stagger system was developed whereby the meters in each of the three districts are now read four times a year at intervals of three months, and in such a manner that no two districts are read within the same month. Modern billing machinery was purchased and a bookless bookkeeping type of billing procedure was adopted. All accounts are figured in the office and are entered in the original meter-readers' books, each of which contains on the average 290 accounts, or two days' work. The billing operation is carried on simultaneously with the reading; the operator, after having prepared her bills and commitments on addressing equipment, fabricates at one operation both the bill and the commitment. Upon completion of the billing operation, the commitments, having been automatically footed to show the totals of the present and past readings, the consumption and the amount of the bills, are checked to eliminate the only possible chance for personal error—the calculation of the rate. Approximately 5,000 bills are thus rendered at the first of every month.

The whole billing process is a straightforward operation having no duplication of effort, requires no copying which would necessitate back-reading or a tedious checking operation, and takes little more than one clerk's entire time.

In general, the public has appreciated the receipt of a bill four times a year instead of at longer intervals, and the fact that the full details of the bill were given, including the date of reading, the present and past reading, the amount of the consumption recorded, all of which did not formerly appear, was pleasing to the consumers. One other result which is of importance to the operation of the Department is that the clerk, in calculating the consumption, reports daily to the meter department any meters which are failing to register. These meters are usually replaced by reconditioned meters within a period of three days.

—From a paper presented by RICHARD H. ELLIS, Water Commissioner, Newton, Mass., before the New England Water Works Association.

Thawing Frozen Water Mains and Services

IN 1916, during a very severe winter, many water consumers of Weston, Ontario, were without water as a result of frost penetrating to the depth of their water pipes and freezing the water, which caused many queries as to why the water had been cut off when the consumers were not in arrears in payment for water consumed. Little was known at that time of means of thawing pipe electrically. Equipment was developed locally and nearly 200 services were thawed out during the winters of 1916 and 1917. This equipment was not required again until the winter of 1933-34, when about 100 services were thawed out.

The equipment, which is mounted on a truck, consists of a 25-kva lighting transformer over which is erected a cross-arm and on which is mounted a primary cut-out and ammeter. Primary connection is the usual 4,400 to ground through the transformer, and the two-wire secondary 110-volt leads, one end of which is connected to the consumer's water pipe just inside the cellar. The other secondary wire is cut through a water rheostat, which consists of any ordinary 40-gallon barrel loaded on the truck, each end of the wire being wound into a spring coil, one fastened to the bottom of the barrel and the other supported near the top of the barrel. The coils must not touch, but the top coil is raised or lowered according to the amperage required for the particular job in hand. The barrel is then filled about two-thirds full of water to which has been added about 15 pounds of salt to make a brine solution. The coils must be submerged in the brine.

Upon arriving at a house in which the pipes are frozen, the primary wire is connected to the 4,400-volt line and the other lead to the ground wire. The secondaries are then placed, one inside the customer's house on the pipe line immediately where it enters the house, and the other is cut through the water rheostat and then to the curb cock shut-off at the street line. If it is impossible to secure results by this connection, it is known that the frozen part must be out in the street, so the wire on the curb cock or service box is moved to some other point, possibly a neighbor's service box connection or a nearby hydrant, and results are usually obtained within a few minutes.

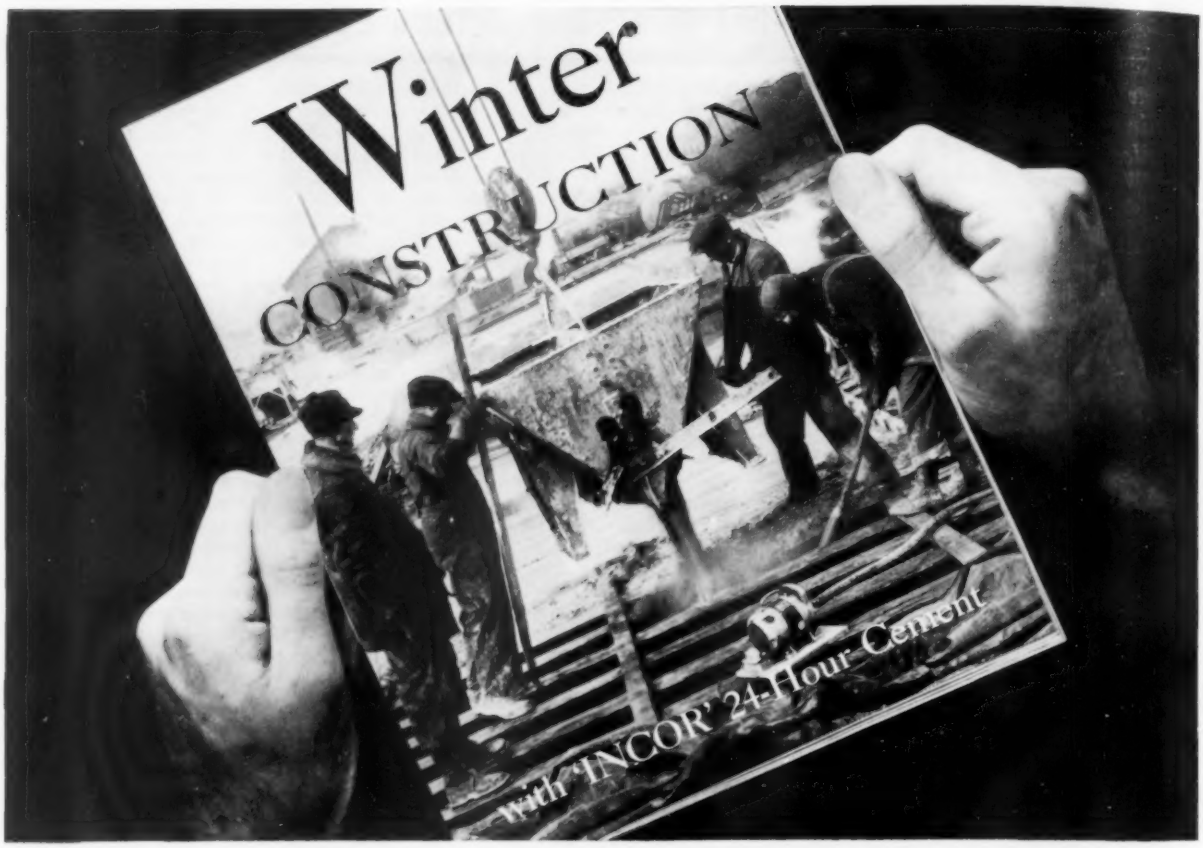
If it is found that there is not a primary line near the consumer's house where the pipes are frozen, and there is a series return street-lighting circuit at that point, the street-lighting circuit is temporarily disconnected and the 4,400 primary circuit is connected at the distant point and carried to the thawing equipment, until the pipe has thawed, and then the series street-lighting service is again renewed. The Department has also disconnected house service wires and used one side for a primary connection instead of running a long line of cable carrying the primary 4,400 volts over the ground to the frozen pipe. While the voltage used is low, rubber-covered No. 4 cable is used in making all conections.

During last winter, there were many services to thaw out, and the truck was sent out into the country to assist the farmers and gardeners in getting water services back into operation after they had been frozen for several days. It has been found that it takes only a few minutes to thaw out the most stubborn cases, the following instances having been recorded:

Size of Pipe	Amperes Required	Approx. Length of Pipe	Approx. Time Required to Thaw
¾ in.	250	300 ft.	3 to 10 minutes
1 "	300	250 "	5 to 15 "
1½ "	350	200 "	10 to 20 "
2 "	400	150 "	15 to 30 "

If the pipes were found frozen on the consumer's portion of the service, a nominal charge of $2.00 is made to cover the cost of the work, but if the frozen part was found to be under the street, the Water Department assumes the cost.

—From a paper by A. G. PIERSON, Superintendent, Public Utilities Commission, Weston, Ontario, presented before the Canadian Section, American Water Works Association.



Cold-Weather Building on Summer Schedules

YEAR-AROUND BUILDING has been talked about for a generation. The fact that this idea, though widely accepted, is not acted on more generally, suggests it may be more a matter of expense than of custom.

It costs money to heat concrete, supply heat protection, and space out construction schedules. Perhaps that is why attempts to 'educate' the construction industries have made so little progress. We may be wrong, but doesn't it seem logical that if you can reduce by 60% or 70% the cost of winter heating and protection; re-use forms in 2 or 3 days, instead of 2 or 3 weeks; minimize the hazards of sudden cold waves, and maintain summer schedules in cold weather—that more headway can be made in the next five years than in the past 25, toward a 12-month building year? The pocketbook is a lot more convincing than the text-book!

Read how 'Incor' Cement makes these savings possible—in a new, illustrated book entitled "Winter Construction." It isn't a lot of sales-promotion copy—it's full of helpful, down-to-earth suggestions. Write for a copy today.

'Incor'* is made and sold by producers of Lone Star Cement, subsidiaries of International Cement Corporation, New York; also sold by other leading cement manufacturers. *REG. U. S. PAT. OFF.

'INCOR' 24-Hour Cement

Waste Disposal – Street Cleaning – Bridges

New York Quits Shipping Garbage to Sea

EVER since the little Dutch town of New Amsterdam grew up to be the largest city in the United States, it has disposed of the major portion of its garbage by towing it some 20-odd miles to sea in large barges and thereby supposedly disposing of it for all time. Repeated complaints from the shore resorts of its neighbor state, New Jersey, finally led to court action and a decree that on and after July 1, 1934, no more garbage from New York City could be disposed of by dumping at sea.

This led to the construction of two new incinerators, one of which, at 9th Avenue and 215th Street, was opened on June 28 Another incinerator, at Zerega and Lafayette Avenues, was placed in opera tion July 1.

Metropolitan newspapers waxed humorous with comments on the event of the last tow of rubbish and garbage going to sea. The *Herald Tribune* headlined the event, "City Sends Last Garbage to Sea with Ceremony." That inimitable national humorist, H. I. Phillips, in "The Sun Dial" of the *New York Sun* broke forth in poetry::

THE LAST JOURNEY

(City officials stood under the Brooklyn Bridge and waved as the last scows left to dump refuse at sea, the new incinerating plants having been formally dedicated.—*News item.*)

Necks were craning from the windows;
  From the roofs a throng looked down;
An event of vast importance
  Stirred the people of the town.

'Twas a function most impressive
  And a gathering of note;
Civic leaders had assembled
  Where the peels and eggshells float.

In the City Hall the Mayor
  Pressed a button, with a smile;
Heaved a sigh of satisfaction
  As he did his bit in style.

Tugboats churning up the river
  Answered with a hearty toot;
In the backwash swirled a salad,
  Partly fish and partly fruit.

Hats were then removed and lifted;
  Bugles blew along the stream;
Handkerchiefs were waved profusely
  As the tugboats gathered steam.

Then the ancient city barges
  Slowly parted from the piers
As the skippers, heads averted,
  Tried to wipe away their tears.

Just a moment more of silence . . .
  Then a cheer in ecstasy:
A metropolis had witnessed
  Its last grapefruit put to sea!

The first plant placed in operation, with a capacity of 750 tons of garbage and rubbish incinerated daily, was built by the Superior Incinerator Co., of Dallas, Texas, at a cost of $1,000,000. The incinerators will consume all except about 8 per cent of the garbage, the resulting clinker being hauled away for fill.

According to Walter D. Binger, Deputy Commissioner, Department of Sanitation:

"In 1933, 19,588,000 cubic yards of refuse were produced in Greater New York. Of this, 20 per cent, or 3,900,000 cubic yards, were garbage; 36 per cent, or 6,997,000 cubic yards, were rubbish; and 44 per cent, 8,690,000 cubic yards, were ashes. Of the total amount produced, 33 per cent was destroyed in the existing incinerators; 32 per cent was used for land fill; 23 per cent was stacked on Riker's Island; and 12 per cent was dumped at sea. "Of the 2,313,702 cubic yards of refuse which were dumped at sea, 825,000 cubic yards were garbage and 1,488,000 cubic yards were rubbish."

A New Creosoted Timber Bridge in Duval County, Florida

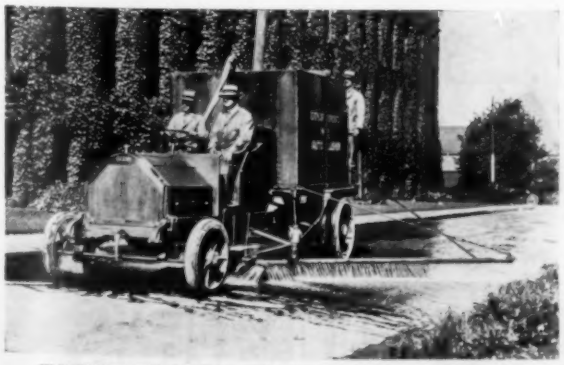
IN October, 1933, Duval County, Fla., of which Jacksonville is the county-seat, built a bridge across Cedar Creek on what is known as the Old Orange Park Road. The bridge is about 7½ miles west of Jacksonville and replaced an old, narrow bridge which had been carrying the rather heavy traffic using this road. With the exception of the channel span, the bridge is of the typical timber pile trestle type. At certain seasons of the year, this creek is navigable, and at times it is also used extensively for the rafting of logs. A fixed channel span 31 feet in length, with a 16-foot clearance above mean high water provided near the center of the bridge, takes care of boats using the stream during the navigable season.

The bridge is slightly over 400 feet in length, and, in addition to the channel span, contains 22 creosoted timber spans, 17 feet center to center of bent, with a clear roadway width of 21 feet. Four piles per bent were used, except in the channel span, where double bents were placed. Caps are 12 x 12 inches x 22 feet, and the floor is supported by 12 lines of 8 x 14-inch stringers 18 feet in length, which, with the exception of the outside stringers, lap over the caps. A 2 x 4-inch laminated floor, 4 x 8-inch nailing strips, and 6 x 8-inch felloe guards were used. For the channel span seven 16-inch I-beams and two channels were required.

In addition to the bridge piers, four 3-pile clusters were driven to protect the piers of the channel span. Piling for the bridge proper varied in length from 36 feet at the ends to 60 feet at the center of the structure.

See the 1934 Municipal Index

for the following important article: "The Transportation of Municipal Wastes," by C. A. Dykstra, City Manager, Cincinnati, Ohio.



FLUSHING BY MOTOR TRUCK IN 1913 IN TORONTO
This was the first motor flusher used by the city

THE MODERN FLUSHER IN PRESENT USE IN TORONTO
It is equipped with a centrifugal pump

IN AMERICAN WATER METERS

you obtain these needed features not found elsewhere. They insure maximum return on your meter investment:

Extra-thick reinforced measuring disc minimizes slippage, compels extra accuracy that wins comparative tests.

Frost bottom tested at the factory to break at the proper pressure—500 to 550 pounds. No dependence on flange bolts.

Frost-protected gear train, with gears that separate upon freezing as well as the chamber.

Chromium-shell gears with enclosed dirt-proof bearings wear almost forever and are adequately lubricated by water. Oil-enclosed gears, optional.

Simplicity that requires only the absolute minimum of parts and keeps each part simple.

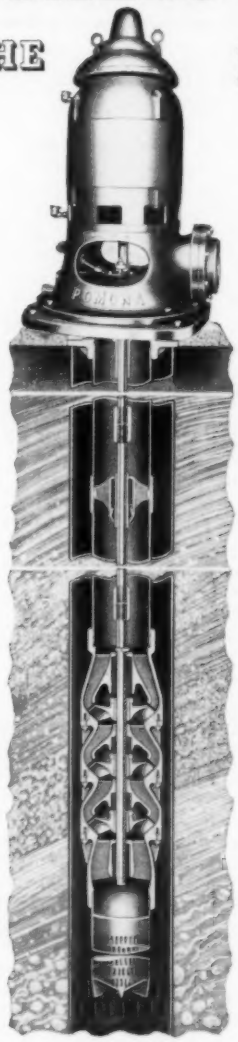
Precision manufacture so fine that all parts are completely interchangeable and are regularly sold singly,—no matched pairs or unit assemblies needed.

Standard stock meters containing the construction described above will be supplied on request for inspection or testing purposes. Our catalog also gives full description.

BUFFALO METER COMPANY

2902 Main Street Buffalo, N. Y.

OUR SALES TALK IS IN THE PUMP



Pomona Pumps are designed in accordance with the most advanced engineering practice. Their operation is vibrationless, silent and dependable. Their rugged, heavy construction and simplicity of design makes them adaptable to practically every pumping condition.

It doesn't matter what or where the city is. It doesn't matter what the city engineer's past experience with pumps has been. They all expect the same thing,—an abundance of pure water delivered by economical uninterrupted pumping. Those municipalities that have installed a Pomona Pump are getting just that kind of service.

To those who possibly are not using a Pomona, but a pump that has served them well, we say, "Before you buy another, take a fair, open-minded look at a Pomona Turbine Pump. Eliminate sentiment, friendship, high-pressure salesmanship. Predicate your decision on a cold-blooded analysis of the facts. Compare Pomona, point for point, with other leading makes." On this basis we are content to rest our case.

Any Pomona Pump representative will be glad to submit estimates.

POMONA PUMP COMPANY

53 W. Jackson Blvd. Chicago, Ill.

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POMONA

Water-Lubricated Turbine

PUMPS

Sewerage and Sewage Disposal

Mechanically Raked Sewage Screens

AT the present time there are a number of different types of mechanically raked sewage screens in use in this country. The type most generally installed employs a raking mechanism which is an adaptation of the principle of the pantograph, whereby a driven gear transmits its motion in large scale to the end of the raking arm. Other types are straight-bar units with a chain or wire rope propelled rake, which carries the material upward and discharges it at the top of its stroke.

Control of the first units was mainly by means of hand-operated switches, requiring the operator's attention for starting and stopping the rake, or it was allowed to run continuously. As there are many periods, especially during the night, when the volume of screenings is small, it soon became apparent that this was wasteful practice, both in power consumption and in wear and tear. To meet this condition and provide a control, a float-controlled switch element has been developed, which operates on the principle of the differential head developed on a screen between the upstream and downstream sides. When sufficient screenings have accumulated on the bars to cause the level of the sewage in the channel approaching the screen to rise, the float which is connected ahead of the screen rises and gradually tips the mercury switch and starts the screen rake. The screen rake then operates until the accumulation has been removed and the level ahead of the screen drops back to normal, when the mercury switch is leveled, the contact is broken and the rake stops. A time element and brake is included in this control which stops the rake mechanism at the top of the stroke so that there is no chance for rags, etc., to accumulate on the rake. The floats ahead of and behind the screen are connected on free-running rods or chains which permit the floats to ride on the surface of the sewage, so that, regardless of the depth of flow in the channel, the rise in head due to matting will operate the control. The loss of head may be regulated from 2 inches to 6 or more, so that the period of screen operation may be controlled at will.

The essential feature in a mechanically cleaned screen is to provide adequate cleaning with least use of power. The bars should be spaced evenly and the rake provided with teeth which project entirely through the bars to prevent accumulations of screenings. The bare cost of installing mechanically cleaned bar screens is usually greater than for plain hand-raked bars, but there are a number of factors which usually show that the extra cost is more than offset by the benefits to be gained. Advantages of the mechanically cleaned type of screen are:

1. The area of screen required for mechanical cleaning is usually not more than half that for hand-cleaned units. In those cases where the screens are housed, the saving in size of structure is of major importance.

2. Automatic float control saves labor.

3. Screenings may be raked up sufficiently high to be discharged directly into cans, carts or incinerators, eliminating handling, which is usually a nuisance and odorous with hand-raked screens.

4. Power is saved where sewage is pumped, owing to practical elimination of loss of head behind the screen.

5. Screenings contain less finely divided organic solids, making the disposal problem simpler and less messy.

—From a paper on the mechanization of sewage treatment, presented by EDMUND B. BESSELIEVRE, Sanitary Engineer, The Dorr Co., Inc., New York before a joint session, Public Health Engineering Section, American Public Health Association, and Central States Sewage Works Association.

Utilization of Gas from Sludge Digestion

UNTIL recent years little progress was made in this country in utilizing the gases given off during digestion of sewage solids, although their value long has been recognized. When the advantage of heating sludge-digestion tanks to reduce the digestion period was demonstrated, the possible economy of collecting and utilizing the gases of decomposition for heating the sludge was appreciated quickly. The facility with which such gases could be collected in roofed, separate sludge-digestion tanks was a contributing factor in the spread of their utilization. At some plants the gases are used as fuel in gas engines, and the collection and burning of gas in waste-gas burners, either open or closed, is considered worth while in some cases, to prevent the possibility of escape of offensive odors, even though the energy of the gas largely is wasted. Other methods of utilizing sludge gas include heating and lighting of buildings, incineration of screenings, operation of gas refrigerators, and sale of the gas to gas companies.

The volume of gas produced in the digestion of sludge depends largely upon the quantity and character of sewage solids digested. Between 8 and 11 cubic feet of gas commonly is produced during complete digestion by a pound of volatile, fresh sewage solids, settling from domestic sewage. Between 70 per cent and 80 per cent of this gas is combustible, being largely methane. The remainder is chiefly carbon dioxide and nitrogen. Under ordinary conditions of operation, digestion is not carried to completion and only about 75 per cent of the total possible gas evolution takes place. On this basis, an average figure for per capita gas production may be about 0.4-cubic foot daily. In the presence of large quantities of organic industrial wastes, however, the average value may be exceeded twofold or more.

Some Specific Examples of This Use of Sludge Gas

Walraven recently has studied the question of developing power from sludge gas at Springfield, Ill., and is convinced that in many instances cities are overlooking a valuable source of energy by using such gas for heating purposes, instead of as fuel within an internal-combustion engine. At the sewage treatment plant of the Springfield Sanitary District in 1932, sludge was digested in six separate digestion tanks, two of which were covered with floating steel gas domes. The volume of gas collected fluctuated between 30,000 and 65,000 cubic feet per day, with an average of more than 40,000 cubic feet a day. Walraven was of the opinion that if gas covers were placed on two additional tanks, and the remaining two uncovered tanks were used for sludge storage only, an average of 50,000 cubic feet of gas could be trapped daily. He estimated the gross annual saving by using this quantity of gas as fuel for a combustion engine at $8,300, compared to burning it in a furnace. Since that time an internal-combustion engine using sludge gas as a fuel has been installed at Springfield and is reported to be operating efficiently and successfully. The engine-cooling water and exhaust gases are utilized to heat the digesters, and sufficient heat is said to be developed to maintain adequate digestion temperatures. A similar installation has been made at Rockville Centre, N. Y.

At the Sugar Creek plant, Charlotte, N. C., two gas engines are available for utilization of sludge gas, with provision for heating the digestion tanks with engine-cooling water. One 225-horsepower engine is directly connected to an air compressor, while the other 75-horsepower unit drives a sewage pump. It is reported that, owing to mechanical difficulties, this method of gas utilization has not proved very satisfactory. The cost of maintaining the engines practically wipes out the value of the power produced.

From these examples it is evident that, although the utilization of sludge gas for fuel in internal-combustion engines gives promise of savings in fuel costs, installations must be designed and operated with care in order to insure success.

At Greenwich, Conn., sludge gas is used to operate an Electrolux refrigerator in the laboratory of the Old Greenwich sewage treatment plant. It is stated that with a few minor changes to the standard gas burner, the refrigerator has operated perfectly, maintaining a temperature of 40 to 45 degrees F. from June to December, 1933. The quantity of gas used for this purpose is estimated to be approximately 5 cubic feet an hour.

—From a paper by HARRISON P. EDDY, presented before the New England Sewage Works Association.

3 Important POLICE RADIO FEATURES offered by GAMEWELL

1 **Gamewell is prepared to furnish radio transmitting equipment for *municipal*, *county* or *state* police requirements.**

2 **Gamewell-Westinghouse offers the only complete line of radio transmitting equipment designed to meet the special requirements of police work.**

3 **Gamewell is the only company in a position to handle your police radio problem completely and without divided responsibility: (1) *survey*, (2) *sale*, (3) *installation*, (4) *service*.**

For Cities, Counties or States
ABOVE 100,000 POPULATION

Gamewell-Westinghouse Type "CQ" Radio Alarm Transmitter

Designed exclusively for police radio alarm service—100-watt unit will serve cities of more than 100,000 people—capacity up to 500 watts to take care of very large cities or counties. Exclusive unit feature makes it possible to increase power as city grows—starting with 500-watt transmitter, state police can enlarge up to 5-KW without discarding, by adding amplifying equipment.

For Cities
UNDER 100,000 POPULATION

Gamewell-Westinghouse Type "EB" Radio Alarm Transmitter

Only 50-watt transmitter on market designed exclusively for police radio alarm service. "EB" Transmitter gives all features of larger units to cities with limited appropriation having less than 100,000 population. Where city is growing rapidly "CQ" Transmitter may be installed and operated down to 50 watts to comply with Federal Radio Commission Regulations, until city exceeds 100,000 mark.

MUNICIPAL, county or state—no matter what your police signaling requirements are, Gamewell is well able to serve you. No makeshift apparatus adapted from other fields—instead, rugged transmitting equipment specially designed for efficient police radio alarm service. This apparatus is built exclusively for us by Westinghouse, pioneer in radio broadcasting and the manufacture of radio transmitting equipment. It will outlast makeshift equipment and furnish more reliable operation.

Gamewell, pioneer in police signaling apparatus for municipalities, is better able to serve your police radio requirements from start to finish. To deal with Gamewell means that you deal with just one reliable company—no divided responsibility to worry you from start to finish. Yes, we're the only company in the field that can make your *survey*, *sell* you the apparatus, *install* and *service* it—four important functions every police official should keep in mind when contracting for police radio alarm equipment.

And, Gamewell is the one company that can serve all of your police signaling requirements from street signal box and recall system to radio alarm apparatus. Write for our booklets R-783 and R-811.

THE GAMEWELL COMPANY
NEWTON, MASS.

GAMEWELL-WESTINGHOUSE POLICE RADIO

Fire – Police – Safety

New Crime-Detection Laboratories

LAW and medicine have joined forces with the police to aid in the solving of crimes committed in the vicinity of Cincinnati. Under the name of "Medical Legal Institute," the city has established a scientific crime detection laboratory, according to the September issue of the *Police Chiefs' News Letter,* bulletin of the International Association of Chiefs of Police.

The Institute is located at the General Hospital, affiliated with the University of Cincinnati. Ballistic and other scientific identification apparatus, such as the lie-detector and equipment for chemical analysis, will be installed at the Institute, which already houses the coroner's office. Facilities of the hospital are available to the homicide squad of the police department, which is expected to use the Institute as a training school for crime detection as well as a workshop on current crimes. Equipment and personnel of the university augment the permanent staff and laboratories of the Institute. The directing board includes Cincinnati's Director of Public Safety, the Deans of the law and medical colleges, the County Prosecutor and the Superintendent of the General Hospital.

In Missouri, police chiefs, constables, sheriffs, prosecuting attorneys and special officers have formed a state crime prevention bureau which will begin activities by establishing a bureau of identification and investigation. The program will be expanded later to include a statewide police radio system, a training school for police, and a crime detection laboratory.

The oldest among scientific crime detection laboratories in this country is at Northwestern University, in Chicago. Contributions of this laboratory, which was established in 1930, include the application of the comparison microscope to bullet and shell identification in cases of homicide by firearms, the improved lie-detector, and the method of determining the age of a person by examination of the "rings" on a single hair of his head.

Free Speakers on Safety in New York

THE organization of a Speakers' Bureau consisting of 50 authorities on accident prevention at work, on the street, and in the home, is announced by Julien H. Harvey on behalf of the Metropolitan Chapter, American Society of Safety Engineers, 29 West 39th Street, New York. Lewis H. Carris, Managing Director, National Society for the Prevention of Blindness, is chairman of a committee in charge of the Speakers' Bureau. Speakers are available without charge to industrial plants, schools, service clubs, women's organizations and other groups.

Abbreviations for Police Radio Messages

A TROOPER in the Michigan State Police, by name Carrow De Vries, stationed at Rockwood, Mich., has developed a system of abbreviations for use in taking down radio messages and keeping a log of them. His list includes some 500 police and geographic words from A to Z, of which 300 were printed in the *Chicago Police Journal,* "13-13," for July, 1934. An example of the method is shown by the following message as received and as transcribed:

7581. Missing from Ann Arbor, Dr. J. Johnson, 40 years, 5 feet 10 inches, 145 pounds, glasses, brown hair and eyes, gray suit, blue overcoat, gray hat; with his son John, 15 years, 5 feet 4 inches, 135 pounds, brown hair and eyes, blue suit; left Ann Arbor on Nov. 19 at 3:00 P. M. for Manistee via Grand Rapids and Baldwin in a Cadillac convertible coupe M 54-502.

The 291 letters, figures and punctuation marks in this message are reduced to 152 by Officer De Vries' method:

7581: Miss A² Dr. B. Johnston, 40—5:10—145, gla, br ha, gy su, bl coao, gy hat; with him his son john, 15—5:4—135, br ha I. bl su, left A² Nov 19 at 3:00 P.M. for Mani via G R & Bal in Cad Con C M54-502.

How London Fights Fires

IN a recent address reported in *Fire,* A. N. G. Firebrace, second-in-command of the London, England, Fire Brigade, recommended hand-to-hand combat with fire plus a working knowledge of fire risks. Some of his remarks follow:

"We train our men to get to the closest grips with a fire compatible with safety. So long as structurally sound staircases can be found from which to work, playing long shots from the street is severely discouraged. We believe in fighting the fire from inside the building and not from outside.

"We do our best to encourage initiative in our officers and men. When I joined the fire service nearly fifteen years ago, I was immensely struck by the executive order "get to work." It is so all-embracing and leaves so much to the judgment of the individual. This is as it should be. Our officers select their own positions from which to get to work, and change them without waiting for orders as the fire situation alters.

"They may be driven out of the building at the start; they must get back there as soon as it is feasible, without waiting for orders.

"If outside branches (of the Department) have to be got to work at the start of the fire, they must be knocked off by those in charge of them, on their own initiative, as soon as it is seen that inside branches have worked their way into position.

"The inside branches have quite enough to contend with without having things made more difficult for them by branches from the street forcing the fire onto staircase landings.

"We find it a good deal quicker to attack a roof fire and prevent it from spreading, by means of turntable ladder branches rather than by lines of hose laid up staircases; but as soon as pump branches are in position, pump crews are trained to take steps to have the turntable ladder branches knocked off.

"Putting water on smoke, even hot smoke, is not allowed. Our men are taught to investigate and work their way in, until they can see or feel the fire.

"You will not, I hope, jump to the conclusion that we are theory worshippers—we do too much practical fire-fighting ever to become that. We all are aware that very often we do not know what it is that is burning until the fire has been extinguished. Speaking generally, we know that fires are put out not by a knowledge of formulas but by the exercise of common-sense and guts.

"But to those who are aiming at the higher positions, common-sense and guts are not enough. If fire-brigade officers are to write intelligent reports, if they are to contribute to the advance of the science of fire fighting, fire protection and fire prevention, then they must have a working practical knowledge of the fire risks existing today.

"They must have a general knowledge, for example, of the way in which electricity is produced and distributed throughout their city; they should know of the risks connected with, say, oil-cooled transformers and switch gear, and of the dangers of luminous discharge tube installations, and they should be able to discuss intelligently electrical risks in general.

"In the realm of chemistry I would not necessarily have officers know a single chemical formula, but I suggest that it is very desirable that they should be aware of the properties of the more common substances and gases in industry."

Reserve Fire Apparatus

"Too little attention is paid to the need for reserve equipment. Most fire commissioners and others having charge of the financial features of fire departments provide only enough apparatus to care for existing companies."—An authority.

Insurance Rate Now Averages 70 Cents; Was 80 Cents in 1929

Before the war, stock fire insurance companies were receiving 105 to 110 cents on the average for each $100 of insurance they wrote; in 1929, 80 cents; 1930, 77; 1931, 73; 1932-33, 70. This is a drop of 35 per cent in 19 years.

QUAKER KEYSTONE

CHLORINE

The dependable quality of Quaker Keystone Brand Chlorine is the result of more than eighty-three years' experience in making chemicals for industry.

Furthermore, due to the convenient locations of our plants, quick deliveries of Chlorine can be made to all parts of the country.

We will be glad to furnish highly specialized technical advice, on request, without cost.

CHEMICALS *for* MUNICIPAL PURPOSES

Anhydrous Ammonia
Ferric Chloride
(Liquor or Anhydrous)
Caustic Soda
Sodium Aluminate
Chlorine
Alum
Chloride of Lime
Penchlor
(Super-Test Calcium Hypochlorite)

Est. 1850

TRADE MARK

PENNSYLVANIA SALT MFG. CO.

EXECUTIVE OFFICES, WIDENER BLDG., PHILADELPHIA, PA.
Branch Sales Offices: New York—Chicago—St. Louis—Pittsburgh—Tacoma—Wyandotte

Did you know that these topics were covered in last month's issue of The American City?

GENERAL PROGRESS

September marked the 25th Anniversary of THE AMERICAN CITY. The work it has done and the quarter-century development of American cities is told quickly, beginning page 53.

DAM, BRIDGES, WATER, POWER

The first article in the September issue described the Springfield, Ill., water-supply and power project—how it was financed, the friendly condemnation suits, the contracts for a 1,700-foot earth dam costing $488,000, and the two concrete bridges costing $384,000. Winners of the power-equipment contracts are listed. The city has established a tree nursery for reforesting barren areas and the lake shore and more than 500,000 trees have been planted, and this work will continue for years.

REFUSE

Waukegan's first year of refuse disposal by the city has saved 70 per cent of the former cost by contract: $3 per family instead of $15. The City Engineer tells how the new job was planned and put over with the cooperation of the public. Number of pick-ups per hour varies from 15 to 25 from basements to 90 to 120 at curb. See page 50, September issue.

CIRCULAR FILTERS

Special features of the new 10-mgd water plant of the Washington Suburban Sanitary District at Burnt Mills include the cylindrical shape and arrangement of coagulating basin, uncovered filters, and 275,000-gallon filtered-water reservoir. This compact plant saved cost and space. It is in two 5-mgd units 100 feet in diameter. Cost is $5,400 per mgd capacity. The Chief Engineer of the district speaks of the "many details for which no precedent appeared at hand."

BOSTON AND FIRE

Boston spends more money per square mile for fire protection than any other large city in the United States. But does it spend too much? The Boston Municipal Research Bureau, on the basis of a recent study, recommends the elimination of six engine companies by name. The Mayor and Finance Committee have requested the National Board of Fire Underwriters to make a survey and present an opinion on the points raised by the Research Committee, whose findings are presented on page 53 of the September issue.

DIESELS FOR SEWAGE

The Braintree-Weymouth pumping station is the first on the Massachusetts Metropolitan System to install diesel engines for power, instead of steam or electricity. There are two 125-hp units flexibly coupled to a 16-inch shaft having a non-clog contrifugal pump at one end and a 10-kw 120-volt d-c generator at the other end. Average fuel consumption per million gallons, based on the guarantee, totals 78.36 pounds, or 10.44 gallons, or 60 cents per million gallons pumped. The sewage is pumped under heads of 21 to 23 feet in quantities of 3,500 gallons per minute at 270 rpm to 10,500 gallons at 360 rpm. On test, the guarantee was exceeded and a bonus earned. Page 66, September issue.

SEWAGE TREATMENT

Carlisle, Pa., is completing a sewage-treatment plant of sufficient capacity to handle its estimated population in 1960—1,460,000 gallons flow compared with the present million per day. It includes a screen made of bars 1 inch apart; a digester for 55 pounds of screenings per day; preliminary sedimentation basins consisting of remodeled septic tanks requiring theoretical detention of 3.6 hours; separate sludge digestion tanks with floating covers that are insulated with Celotex to reduce heat loss and maintain correct temperatures for sludge digestion; 9,580 square feet of glass-covered drying beds, 0.56-square-foot per person in 1960; three trickling filters, each for 3,860 persons, or 330,000 gallons per acre-foot; disinfection house for dosing with chlorine; a resettling basin for retaining solids from the trickling filters. A grit chamber is not needed. See page 80, September.

INEXPENSIVE BITUMINOUS ROADS

Low-cost construction and maintenance of bituminous-surfaced roads require the greatest use of local materials, thus developing many materials, types of surfaces, and methods of construction. As the bases of low-cost roads are usually flexible, the bituminous surface must be pliable to prevent the common fault of cracking. An article on page 70 discusses plant and road-mix surface courses (1 inch or more) and the single and double surface treatments (less than 1 inch), and the article continues in this October issue with emphasis on bituminous dust and soil treatments and tests of liquid asphaltic materials. Here in two issues is a comprehensive study of methods of building low-cost bituminous roads.

SNOW

New York City spent $7,000,000 for snow removal last year. Page 76 tells how the records were kept.

LONG-RANGE PLANNING

In 1923 the Reading, Pa., Chamber of Commerce recommended that 22 projects be undertaken by the city and county during the next 25 years. Twelve of these have been completed, five others in part, and only three remain untouched. City and county governments are now in modern buildings; there are new schools and a museum; water, sewage, park and play areas have been extended. In short, most of the 25-year program has been completed in 11 years. Page 82.

HOPE FOR THE COUNTY

Elect a county board with an executive, like a city council and manager; drop the townships; build consolidated schools and libraries for each several townships; provide health service to adults on an annual-payment basis; reforest barren areas and hillsides, providing scenery and local lumber and poles; stock the forests and parks with game. The county is becoming the city's playground. Establish a recreation office and a director to sell the resorts, parks, lakes, rivers, golf courses, to keep home folks within the county and attract profitable strangers. See page 74.

Back issues of THE AMERICAN CITY *may be obtained at 35 cents each—or a subscription may be placed at $2 per year to include the September issue, in which the articles mentioned above and other valuable material appeared.*

Park and Street Maintenance

Greensboro, N. C.

When Greensboro paved over its street car tracks recently, two cars were left stranded at the end of a distant line. How to get them back to the car barn was a problem . . . then this Model "WC" Allis-Chalmers tractor and trailer came to the rescue. Tracks were laid on the trailer, permitting each car to climb up under its own power. With this 20,000-pound load, the versatile air-tired tractor sailed along at 10 miles an hour, taking each car for its last run over trackless streets. Greensboro has a new trackless trolley system.

Los Angeles, Calif.

Living up to its reputation as one of the great playground areas of the nation, California goes right on building more facilities for recreation. This is a scene at the new Olympic Country Club during its construction. An Allis-Chalmers Model "L" tractor was called on to pull a 12-yard scraper—and this combination hauled approximately 1,500 cubic yards of dirt in eight hours on an 800-foot haul. The 70 hp. Model "L" has six speeds forward ranging up to 6.47 miles per hour—a definite aid in high-speed dirt moving.

For Your City . . .

Loading dirt, picking up trash or cinders, loading snow . . . and other similar work . . . is a vital problem which more and more cities are solving with the Model "M" tractor, equipped with front end loader. Such an outfit does the work much more economically than hand labor . . . is much faster . . . is always ready for any emergency, such as snow removal after a storm. Its dumping clearance is more than six feet . . . ample for loading most trucks. The 27-hp. Model "M" is ideally suited for this work and the loader is solidly braced and mounted to prevent oscillation.

Has your city checked the advantages of Allis-Chalmers equipment—and the savings now possible? Write for information.

ALLIS-CHALMERS

TRACTOR DIVISION · MILWAUKEE, U.S.A.

OCTOBER, 1934

Vol. XLIX, No. 10

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

THE AMERICAN CITY advocates:

An abundant supply of clear, safe, palatable water

Streets and roads that are well built, well lighted, well maintained

Sanitary disposal of sewage and garbage

Fire and police departments properly trained and equipped

Traffic control for safety and facilitation; fewer grade crossings

Plenty of parks, parkways, playgrounds, and swimming pools

Banishment of slums, and building of well-planned home neighborhoods

Administrative efficiency and citizenship co-operation in bringing these things to pass

The Mayors Confer with the President

Permanent Federal Relief and Public Works Program Proposed by Executive Committee of United States Conference of Mayors

A DELEGATION of nine Mayors submitted to President Roosevelt and to Harry L. Hopkins, Federal Emergency Relief Administrator, at Hyde Park on September 22, a carefully considered proposal for a long-time program of unemployment relief and Federal aid to local public works. The group, representing the Executive Committee of the United States Conference of Mayors, was led by Mayor F. H. La Guardia of New York, the others being Mayor Daniel W. Hoan of Milwaukee; City Manager C. A. Dykstra of Cincinnati; Mayor T. Semmes Walmsley of New Orleans; Mayor Frederick W. Mansfield of Boston; Mayor Watkins Overton of Memphis; Mayor Harry L. Davis of Cleveland; Mayor M. C. Ellenstein of Newark; and Paul V. Betters, Director of the United States Conference of Mayors.

The full text of the statement presented by the Mayors to the President follows:

Text of the Statement

It is the conclusion of the Executive Committee of the United States Conference of Mayors, after comparing conditions in the various cities and studying all available data, that the country is reaching a new normal level. Granted an improvement in conditions of today, the present number of unemployed cannot possible be entirely taken care of by industry, agriculture and business for some years to come. It therefore becomes necessary to think in terms of a long-time program which will meet what is called "the unemployment problem."

The unemployed may well be divided, for the purpose of fixing the responsibility of their care, into two classes —those people able to work but unable to find employment, and those mentally, physically or otherwise unfit for regular gainful employment. The latter have been and should continue to be the charges of the state and local communities (except men disabled in the military or naval service, which always has been a Federal responsibility). The permanently involuntary unemployed, by reason of changed conditions, must be cared for under an established system, supervised by the Federal Government. It is recognized that, owing to the great number of workers who cannot be absorbed, employment must be created and found for them.

The Proposed Plan

We therefore believe that it is necessary to establish a permanent Federal relief fund, preparatory to the creation of a nation-wide system of unemployment insurance. Under this plan insurance benefits would be administered by the Federal Government and all current financial requirements would be secured from current revenue.

This permanent unemployment work relief fund and program should include the following features:

1. It should include all workers of all types.
2. The governments, Federal, state and municipal, should draw upon those benefited from the fund for work on public work relief projects.
3. Such benefited persons should be paid prevailing wage rates up to the amount of the determined benefits.
4. The United States should be divided into regions for the purpose of fixing weekly benefits in accordance with the regional costs and standards of living.
5. General administration and supervision of the plan and fund should be the responsibility of the Federal Government.

The Immediate Program for the Fall

With regard to the immediate situation confronting us, it is imperative that the work relief program of the Federal Government be continued and expanded if the welfare and morale of our people are to be maintained. We recognize that work relief must be given immediately to all employable persons now on relief. Our studies force us to the conclusion that the real purpose of an immediate work

relief program will fail unless there is adequate provision for costs of material as well as labor costs.

We further recommend that where possible there should be effected closer cooperation with regard to selection and administration of work projects between the municipal governments and the relief authorities. In this connection, we are of the opinion that many persons could be profitably placed at work in the field of governmental social services.

This expanded work relief program should be carried out until such time as the Congress of the United States enacts into law a permanent long-term program in accordance with our primary recommendation.

Public Works Plan Urged

We have from the outset of our conference and still do hold steadfastly to the belief that the best stimulus to recovery is a Federal public works program promoted on such a scale as to make an impact upon private industry. Such a program not only lessens the burden of relief but provides the method by which the cities and states of the nation can be enriched by the expenditure.

The nation is confronted with a severe shortage in housing which is being augmented very rapidly by the failure of building operations in this field. There is not only need of a general demolition and rebuilding of our slum areas, but we must also provide for low-cost housing to help those not otherwise able either to acquire or gain possession of a home. In neither field has private capital in the past or in the present been able to operate. All other modern nations have been compelled to attack this problem as a social undertaking. We suggest financing and general supervision of such a program by the Federal Government as offering one of the best means of employing labor and stimulating business.

Second in importance is a provision for the financing of self-liquidating public works. The only obstacle to the promotion of such enterprises in large numbers by local governments and states is the difficulty of obtaining immediately the funds required to commence operations now.

Next in order in the great field of public construction are those public facilities such as schools, public buildings, and so forth, from which the locality derives no direct revenue. Finally, we suggest that many localities are prepared to promote in a major way the abolition of present street crossings over railroads and interurban lines at grade, if only they can be financed.

Cooperation of Cities Pledged

Such a public works program as is here outlined can proceed without straining the credit of the Federal Government or of cities by the initiation of a fiscal policy which will allow cities to use their full available credit resources in combination with the financial agencies of the United States. At the same time such a program will lessen the interest burden now resting on local governments.

In connection with the unemployment problem, which is in many respects largely an urban problem, we recognize that by providing work and wages to our unemployed persons we shall expand the markets for our great agricultural population. The only market for our agrarian workers lies in the direction of increased purchasing power of city groups.

We appreciate the cooperation which the Federal Government has extended to the municipal governments and we pledge a willingness to cooperate in the development of this program, which has for its ultimate goal the solution of the most serious social problem which has ever confronted the United States.

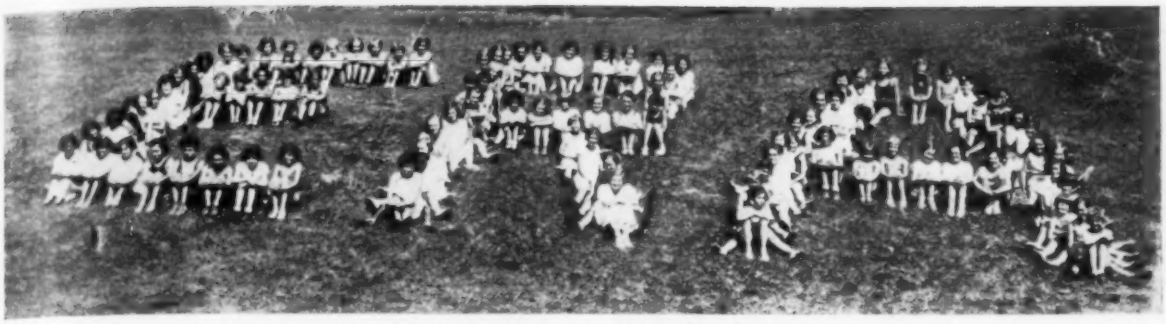
Hartford Gets Results from Its Municipally Operated Research Department

SAVINGS of $37,000 a year to the city of Hartford have resulted already from the adoption of suggestions made by its Municipal Research Department during the Department's first four months of operation, Rollin B. Posey, Director of the Department, told the New England Council's thirty-sixth quarterly meeting at South Poland, Maine, on September 22.

Naming as the objectives of all municipal research the discovery of ways to increase the economy and efficiency of governmental operation, Mr. Posey, who is in charge of the only municipal research body in New England which is an actual part of the city government, pointed out some of the advantages which he believes his department to have over the more usual research organization financed by private funds.

"Governments are just as complicated as private businesses," the speakers said. "Being right on the spot is a considerable help in becoming familiar with their problems." In addition, a municipal research department, established under proper conditions, has the power to obtain the facts of city operations in spite of possible opposition. He added that his department had not found it necessary to use this power. Mr. Posey also pointed out that municipal officials welcome the opportunity to consult the Research Department about their problems. "The recommendations made by a research department are submitted to the various departments for study and action. Since these recommendations are official, they cannot be neglected or ignored. An official research department brings action." He emphasized the importance of trained, non-partisan personnel, both in the research department and throughout the administration of municipal governments, as the only means of securing real efficiency in operations.

Since the establishment of Hartford's Municipal Research Department, on April 23, 1934, with an appropriation of $10,000, it has drawn up a new coal contract for the city, more equitable to both city and dealers than the old, has secured data which enabled the city to obtain an increased share of Federal relief funds, and has surveyed the Street, Health and Police Departments, making recommendations for each, Mr. Posey said. Recommendations already reported would, if put into effect, bring about savings estimated at $340,000 a year, plus $15,000 in general tax relief. Although some have not been adopted, and others are awaiting final action, enough have been accepted to realize "a clear saving to the city of $37,000 a year," and "net tax savings realized already would pay the cost of the Research Department many times over. Not one of these recommendations cripples service or hides away costs to be met in future," he said.



THE E.R.A. IN TERMS OF HUMAN HAPPINESS

New Jobs in the Recreation Field— The Springfield Recreation Project

By ELIZABETH S. MOQUIN

THE Playground Project in Springfield, Mass., stands as a pioneer in its particular field. Early in July this year it opened 27 new play areas for general city use, thereby making a total of 50 playgrounds under the supervision of the Park Department. City funds to the amount of $5,000 were appropriated for equipment, and for the present, at least, wages for the employees are taken from ERA allocations. Eventually, Springfield has every reason to believe, these new playfields will take their place as permanent institutions. They will be the nucleus for community-center expansion during the fall and winter months, when an extension of the summer recreational work may be anticipated.

Over 150 people are employed on this project alone, of which Harry R. Clark is the originator and Chief Director. Recreational projects in general in this city provide a living for some 215 people and their families or dependents. These people are of high caliber, chosen for special ability in educational or recreational lines. Investigation of their cases showed that whereas all of them were in need of employment as a relief measure, few of them had made application for direct aid from the city.

John H. Millar, assistant in the Educational Division of the FERA, who has watched the Springfield Playground Project come from the realm of imagination into that of reality, and whose repeated encouragement has frequently spurred it to greater creative usefulness, has expressed his desire to have its set-up used for a model for other towns and cities of the nation to follow in increasing employment and developing the native resources of the community.

Everybody Plays—Even Father

The new playgrounds in Springfield are really recreational centers for adults as well as for children. They are open from 9 A. M. to 8:30 or 9 P. M., and to date have given an opportunity for supervised play and instruction to an average of 25,000 children a week. Evening crowds of 500 or more on a single playground are not unusual. Men, women and children gather to take part in the evening program. They may play softball, volleyball or newcomb; they may pitch horseshoes over by the fence; they may sit on benches and join in community singing, or they may dance on the school walk as the ERA orchestra plays.

Frequently, there will be a lemonade-stand or booth where neighborhood urchins sell fruit juice and ice-cold drinks "for the benefit of the playground." After carefully deducting their expenses, the boys put their earnings in a box or jug, to be saved for playground equipment. Perhaps they need more softballs than have been provided or their old ones need to be taken to the tailor down the street for renovation; or possibly they are saving their pennies to purchase scrapbooks, crayons or other material needed in the handicraft classes.

The Supervised Activities

In addition to the regular playground directors who form most of the personnel of this project, there are five district-supervisors who have under their supervision five or six playgrounds each, and twelve special instructors who travel from one play area to another, giving instruction and forming groups for work and study in handicraft, dramatics, sewing, nature, music, camping-and-hiking, bird-study and folk dancing. They start the children on hobbies which may lead to permanent interests in their lives. A small, efficient office force completes the list of employees for the Playground Project. They are statisticians and stenographers who work in the laboratory room —which is really the upper sun-parlor of Barney Villa, on the beautiful Barney Estate at Forest Park—where this experiment in human values is being tried out.

Dramatic and dancing specialists have had unusual results from the playground children. Children are naturally theatrical. They play to an audience either present in the flesh, or pictured in their imaginations. If this dramatic instinct can be run into constructive channels, it can be made a fine source of character-building. The same is true of the dancing instinct, and for that reason,

EYES ON THE BALL

A LESSON IN LIFE SAVING

folk-dances have an important place on the playground program.

Lacking facilities of music and a polished floor, the dancing specialist claps her hands, groups the children in pairs around an imaginary may-pole—more often than not on a pine-needle floor—and again clapping her hands, beats her own time, or hums by way of accompaniment. The children respond with a display of enthusiasm seldom seen in organized dancing classes held in ballrooms. There is no compulsion. The specialists aim to stimulate a desire for grace, beauty and self-expression.

Hiking and Camping

Nature and bird hikes have their places in the curriculum of these community playgrounds, as well as overnight camping trips, all under careful and experienced supervision. When a hike has been arranged by the camping specialist, the day and place are advertised on the playground bulletin board. Children are expected to obtain parental permission, wear comfortable clothing and bring their food, blankets and bathing equipment.

No one can estimate the value of these hikes to these children, individually. Many of them have never before experienced a night under the stars, while others have such a meager knowledge of wood-life and campcraft that a trip to some lakeside or hill resort is equivalent to a day in Paradise. Comradeship, friendship and interest in the great and wonderful world about them are fostered through picnics and camping tours. Trips to museums where still-life and botanical and zoological specimens may be studied and examined at close range, give the children more to think about than the petty and personal problems that are as much a part of the every-day life of a child as of that of an adult.

Dramatic representations held in school basements, when a playground is located in a school-yard, doll shows, pet shows, costume parties and pageants are all on the weekly programs of these new, neighborhood play areas. Many of the playgrounds were formerly vacant lots. Some of them are in delinquent sections where, as the city police department agrees, they are sorely needed.

An exhibit of the activities of the various playgrounds and a display of the work done will be held during the Eastern States Exposition at Springfield this fall, and the Playground Project will also be represented in Washington at the Recreational Congress to be held there in October.

If Springfield's Playground Project becomes a permament institution in that city, the children who have had a chance to attend the playgrounds, should be prepared to become worthy citizens. The fact that they have had their childhood or adolescence at a time of national recovery should insure a heightening of morale, rather than a lessening of it. A blend of practicality and idealism while they are in their minority, should make for better citizenship when they reach their majority.

Planning Studies Suitable for Local Work-Relief Projects

From Information Bulletin, September 24, 1934, of the Regional Plan Association, Inc., New York

1. Base Map—Prepare a base map of the community, at a scale of from 100 to 400 feet to the inch.
2. Highways—Show on a map or maps:
   a. Existing streets (of all kinds), with present right-of-way and roadway widths, types of pavements, and grades in excess of 6 per cent.
   b. Dead-end streets, with study of resulting problems.
   c. Location of motor vehicle accidents.
   d. Traffic flow, probably based on new traffic counts.
   e. Studies of street extensions, widenings, by-passes, grade eliminations, etc.
3. Transportation—Show on a map or maps:
   a. Railroads.
   b. Trolley and bus lines, with graphic presentation of passengers carried.
   c. Terminals, docks, airports, etc.
   d. Studies of any additional facilities.
4. Land Uses and Buildings, Especially If the Town Is Not Zoned—Show on maps:
   a. Existing buildings by type, use, condition, etc.
   b. Publicly owned property, including parks, playgrounds, building sites, etc.
   c. Studies for development of existing or proposed parks and playgrounds.
5. Utilities and Public Services:
   a. Schools and school districts.
   b. Fire houses, water mains and hydrants.
   c. Street lighting—adequacy and relation to street accidents.
   d. Sewerage system and main drainage areas.
   e. Police call boxes.
6. Statistical Studies:
   a. Population, past and present; dot maps showing distribution.
   b. Land values.

Good-by Dust and Potholes

The Procedure and Results Secured With Stabilization, Presented in Detail

THE proper conditioning of a considerable mileage of unpaved city streets is a problem facing practically every city administration. Property values have shrunk and tax delinquencies are so general that consideration of pavement plans through assessment would be largely confiscatory.

Under the circumstances, wherever existing streets are seriously inadequate to traffic requirements and constitute a nuisance on account of dust and dirt and require unusual maintenance, it becomes necessary to resort to some type of low-cost improvement. The stabilization of natural gravel or other aggregates through the application of soil principles recently developed by the Bureau of Public Roads is producing such unusual results as to have already gained wide attention among highway engineers.

The Method

The procedure involves building up a solidly compacted mat of natural soils, obtaining maximum density through the careful gradation of the constituents, working down through the sand, silt and extremely fine clay fractions for filler and binder. The work, whether consisting of reconditioning existing surface materials or building up an entire new surface course, has proved most successful in developing an extremely durable wearing course, impermeable to water and requiring a minimum of maintenance. The stability of the wearing course depends upon the bonding effect of moisture, applying the same principles as prevail in the highly consolidated beach sands at Daytona. Calcium chloride, which dissolves itself in moisture taken from the air, is used to furnish the moisture film cohesion necessary to prevent loss of the fines and consequent unbalancing of the filler proportions, since rain is too infrequent and undependable for this purpose.

Considering that the construction costs are ordinarily no more than the simple graveling of a road, and that a dustless, hard-surface, all-weather road results, which requires maintenance only at intervals of several weeks and sometimes months, it appears that this new development in highway engineering may fill a great need in city street improvement.

Work Done in Barberton, Ohio

Asplundh Street in Barberton, Ohio, was one which constantly required repairs due to the formation of pot-holes. When a survey was made to determine the cause of these failures, it was found that at various times cinders, slag, limestone, and waste lime had been used. Little attention was paid to the use of a clay binder, therefore the road primarily consisted of unstabilized aggregate. Considerable of the slag and limestone was 1½-inch and over in sizes, and it was decided to remove the old material to a depth of 8 inches and replace it with a stabilized mixture.

In searching for material suitable to use, a bank was

BEFORE AND AFTER STABILIZING AN UNPAVED CITY STREET

1 and 2. Two views of Asplundh Street, in Barberton, Ohio, before the street was improved with curbs and stabilizing with calcium chloride in 1933. 3 and 4. Two views of the same street with curbs and the surface improvement described in this article

found which when incorporated with some graded crushed stone and some clay gave the following analysis:

Aggregate	43%
Coarse sand	16%
Fine sand	17%
Silt	10%
Clay	14%
Plasticity index	7

To build an 8-inch stabilized slab between 720 and 750 pounds of materials were needed per square yard. Of this quantity, about 35 per cent was graded crushed stone, 10 per cent was clay from a local source, and the remainder was bank run material. It was not desired to use a bank containing too much aggregate, since crushed stone was preferred owing to its keying action, and a better control could be had on the gradation desired.

This stabilized street was constructed in layers of 2 inches. Only sufficient crushed stone, bank run material, and clay were spread in the order named for making a 2-inch layer. The clay was delivered in a fine state, which eliminated the necessity of its being pulverized. These materials were thoroughly mixed by blading them together back and forth across the street. The stabilized mixture was then spread uniformly over the street and compacted with a 10-ton roller. In order to prevent segregation and obtain a more uniform mixture, the materials were moistened by sprinkling. This also aided in compacting each layer.

After the top 2-inch layer was shaped and compacted, 1½ pounds of calcium chloride was applied per square yard. This kept the soil mortar in a cohesive state and firmly bound the aggregate, and at the same time kept the street dustless. The street was constructed eleven months ago and has gone through a severe winter without requiring any maintenance. This method of construction not only eliminated costly repairs, but also made a street with an exceptionally smooth riding surface.

Land and Taxation Policies Discussed by Researchers and Political Scientists

CORRECTIVE and preventive measures for the better economic health of national and local governments were discussed by researchers and political scientists at Cazenovia, N. Y., during the last week in August. The occasion was the annual meeting of the Governmental Research Association, in joint conference with a group representing the American Political Science Association. The results are summarized in the September issue of *Public Management*, by C. C. Ludwig, Field Director of the American Municipal Association:

"More than sixty attended the conference, representing most of the private and semi-public government research agencies of the country. The Federal Government was represented by Lent D. Upson and Corrington Gill of the FERA. Political science professors present and contributing were Cline of Princeton, Cottrell of Stanford, King of Pennsylvania, Leland and Kerwin of Chicago, Mitchell of Brown, Sly of West Virginia, Steadman of Syracuse, and Studenski of New York University.

"Under the able and philosophical guidance of Philip H. Cornick, of the Institute of Public Administration, the conference delved deeply into the problems of debt, land use, revenues, relief, and county government reorganization. While the purpose was to raise and answer questions relating to these five subjects, and not to derive a consensus of opinion, trends of thought and suggestion might be summarized as follows:

"That our major depressions, although primarily due to wars, are vitally related to land speculation;

"That municipal debt increase is based on the people's false assumption that land values and commodity prices will continue indefinitely to increase;

"That municipal debt defaults are a serious problem requiring concessions from creditors in their own interest; that the Federal Debt Adjustment Act is desirable and should be made permanent;

"That for the future some more effective supervision over local credit is desirable, exercised possibly through a government credit agency for the financing of municipal short-term and long-term credit needs;

"That the public must, in self-defense, exercise greater control over land use, either through police power zoning control or through taxation control;

"That the public needs to acquire and develop a public domain;

"That the movement for property tax limitations and for shifting the burden to indirect forms of taxation is of doubtful advantage;

"That Federal, state, and local fiscal systems and policies should be coordinated as much as possible;

"That an emergency formula needs to be worked out to determine how much state and local governments should contribute to relief needs;

"That basically the Federal Government should be primarily responsible for providing work for the 'employable' unemployed;

"That county-city consolidation holds out more hope than county-city separation, and that experimentation should be encouraged through county home rule and through gradual reorganization, one function at a time."

A Newspaper Pioneers in City Planning

A NOTABLE instance of newspaper leadership in movements for civic progress is the campaign now under way in Attleboro, Mass. This was started in April when, under the joint auspices of the city government and the Chamber of Commerce and sponsored by the *Attleboro Daily Sun*, that city held its first exposition with the idea of informing its citizens of the details of city business, the reasons for the tax expense and some idea of how the future city could be planned. At this exposition, which had a record of 5,775 paid admissions, 18 city departments had booths and 54 booths were used by manufacturers and retailers.

The exposition was followed by the appointment of an Attleboro 1944 Committee, headed by ex-Mayor Harold E. Sweet. The Committee is to plan the city's progress in various directions during the next ten years, ending with the 1944 celebration, when Attleboro will be 250 years old. A fund left in 1894, when the city had its 200th birthday, has been on interest ever since and will provide the money for the celebration.

The 1944 Committee is to encourage various groups of citizens to study matters of civic progress, and many of the items will involve no tax expense. It plans studies of broad problems of industrial development and city growth, as well as of such details as better railroad and bus terminals, yearly programs of street and sidewalk construction, setting out trees on new streets, preserving the war record of the city, and having the manual training classes build street signs.

In a recent letter to THE AMERICAN CITY, C. C. Cain, Jr., publisher of the *Attleboro Daily Sun*, writes:

"In effect, this 1944 Committee is our planning board, since the City Planning Board, vigorous in the days of Chairman Joseph Finberg, has been crippled by the City Council until now the Planning Board lacks both appropriation with which to function and the spirit with which to act."

Making an Emergency Water-Waste Survey

By FRED B. NELSON, Assoc. Mem. Am. Soc. C. E.
Civil Engineer, Department of Water Supply, Gas and Electricity, New York

THE water shortage conditions of 1930 in New York City, with dangerously low content of reservoirs and increasing consumption approaching the safe yield of watersheds, compelled serious consideration and emergency waste-reduction measures. The existing field survey parties were increased from four to eight and started working January 1, 1931. The emergency condition called for the most direct methods to stop the greatest possible leakage in the shortest possible time. The usual preliminary studies by consumption gagings, subdivisions, etc., to localize the wasteful section were therefore discarded, and an Aquaphone survey, believed to be a novel method for the purpose of thoroughly covering a large distribution system, was adopted.

Evident and Non-evident Leakage and Savings

There are two kinds of leakage in underground water mains, which may be classed as "evident" and "non-evident." The evident leakage is that which causes a flow visible at more or less distant points, resulting in public inconvenience or property damage, and inevitably a complaint to the department. Such leaks are frequently very small, but demand attention out of all proportion to the value of the water involved. Non-evident leakage, from which the flow neither is visible nor causes any complaint or immediate damage, may develop into a waste of tremendously serious proportions as far as aggregate pumping and supply costs are concerned, and may even hasten the need of bond issues for additional sources of supply or equipment. On the basis of work done on evident leaks which have led to the finding of non-evident leaks, it has been estimated that the cost of stopping this leakage, assuming that the leaks would have continued for an average of two years, is from $2.50 to $8.00 per million gallons of water saved.

The amount of underground leakage corrected each year has fully equaled the normal annual increase in the five-borough consumption in pre-depression times. The work, therefore, has postponed for three years the necessity of bond issues for development of major additional sources, such as the $220,000,000 Delaware River project, and at a cost that is but a fraction of 1 per cent of the interest and sinking-fund charges on that amount. The cost per million gallons of conservatively estimated saving has averaged $2.30 as against $45.00 per million gallons as a low valuation of the water delivered to the city line and exclusive or distribution costs.

How the Aquaphone Talks

The Aquaphone is the simplest of many devices designed to detect leakage in water pipes. It consists of a metal disc attached to the end of a small rod and enclosed in a telephone receiver shell with the rod protruding through a plug in the opening normally provided for the wire. Leaks are detected by a slight vibration or sound picked up with the Aquaphone placed on metal connections or fixtures on the mains, such as hydrants, street valves and services, or on bars driven to contact with the main. The intensity and character of this sound varies tremendously owing to the size or the mass of metal in the main, the character of the break or opening, the density of the soil, whether the leak is submerged or discharging into an open rock-fill, etc. Efficient results can therefore be accomplished only by an ear trained and experienced in detecting the faint variable leak sound and in identifying it from the generally more intense vibration due to surface and underground traffic, steam boilers, regulating valves, motor hum, machinery grind and other like sounds. Thorough Aquaphone detection work requires a man with a sensitive, experienced ear and one who is "water-waste conscious." These essential qualifications among skilled or unskilled laborers are rare, and the efficiency of properly qualified men is greatly improved by long experience.

A number of more sensitive amplifying devices have been tried out, but under New York conditions they have almost unanimously been discarded by experienced men as giving all sound vibrations and unnatural intensity that adds to the confusion and difficulty of recognizing the leak sound. Instruments for "selective tuning" to eliminate other than leak vibration have not as yet passed the laboratory stage, probably owing to the fact that we are dealing with "noises" rather than with "tones" with a definite frequency and all being "broadcast" without carrier waves.

Field Work

The field forces on all waste detection are fully equipped to handle the three stages in the stopping of underground leaks—namely, detection, location, and repair—independently of the repair shop force except for major repairs, such as broken mains, re-running of large joints, etc. In such cases, the excavation is made by the waste-survey force and the repair is turned over to the shop. In New York services belong to the property owner. Therefore, notice to an owner to repair a leaking service is given only after the tap has been excavated for a test to prove that the vibration detected is not from a leak on the city main. The opening is then turned over to the owner's licensed plumber on the usual permit. On both complaint and survey forces it has been found inefficient and impractical to coordinate repair shop and waste-survey work without serious delays and interference with both.

Results of Three Surveys

Since November, 1930, the boroughs of Manhattan and Bronx have been covered twice with Aquaphone surveys. A third and more intensive survey was started January 1, 1934. The first and second surveys were conducted to meet the threatened water shortage emergency as effectively and promptly as possible. The first survey included, in the detection work, an Aquaphone sounding on each street valve and hydrant only, with the objective of locating the

largest leaks as rapidly as possible. Detection work on the second survey included, in addition to valves and hydrants, the aquaphoning of probably 50 per cent of the services inside the buildings, aiming to detect service and main leaks too small or too distant to be detected at the valves and hydrants. More detailed aquaphoning, bar sounding, etc., for the final location of leaks was the same in both surveys. The third survey, more intensive and including the aquaphoning of all services and available contacts with the mains, was started January 1, 1934, as mentioned above.

The following tabulated comparison of the results of the first and second surveys illustrates the relative effectiveness of the two methods, the increasing efficiency of the force and other features. The results of the first six months of the third survey are given for a like purpose but in a limited degree, since this report covers but a fraction of the area including the more difficult portions.

COMPARISON OF SUCCESSIVE AQUAPHONE SURVEYS
MANHATTAN AND BRONX BOROUGHS

Survey	1st		2nd		3rd (Not completed)	
Dates	Nov. 1, 1930 to Mar. 1, 1932		Mar. 1, 1932 to Jan. 1, 1934		Jan. 1, 1932 to June 1,1934	
Months required	16		22		—	
No. of leaks located	209		471		146	
No. of leaks per mo.	13.0		21.4		36.5	
Mgd located	33.791		54.875		14.642	
Mgd per mo.	2.12		2.49		3.66	
Av. size of leaks (mgd)	0.161		0.116		0.100	
Total cost	$54,854		$94,597		$25,114	
Cost per mg saved (2-year basis)	$2.224		$2.36		$2.35	
Classifications:						
Total Number	209	%	471	%	146	%
Live services	87	41.6	253	53.7	84	57.5
Abandoned services	19	9.1	37	7.9	8	5.5
Valve leaks	9	4.3	24	5.1	7	4.8
Joints in mains	83	39.7	131	27.8	17	11.6
Broken main	6	2.9	11	2.3	7	4.8
Inside plumbing	—	—	13	2.8	23	15.8
Miscellaneous	5	2.4	2	0.4	—	—

It is important to bear in mind that the results given under the second survey were accomplished after the ground had been covered and the leakage of the first survey eliminated from the field only a few months previously. It is significant that by an increase of 5 per cent in the cost per million gallons saved, the work was accomplished still a long way under the economic limit of the cost of the work as compared with any conservative estimate of the value of the water saved. There has been a considerable gain in the reduction of non-evident leakage, as indicated by the smaller average size of the leaks found on the second coverage of the area. There has been an increasing efficiency of the force, as evidenced by the stopping of 65 per cent more leaks per month of 72 per cent average size at only a 5 per cent increase in cost on the second survey as compared with the first. On the second survey 2.25 times as many leaks were found, indicating a decided increase in effectiveness of the method used.

Measuring the Individual Leaks

The determination of the amount of leakage stopped on the survey and complaint work is based upon a computation of the discharge of the individual leaks. Very few, when necessary, are conservatively estimated. Even small ones that are uncovered are sometimes measured by timing the discharge with a pail or container of known capacity.

Where the discharge is from a crack or opening, the minimum dimensions of the opening are taken and the pressure obtained from the nearest hydrant or fixture. The orifice formula is then used with a coeffcient of 0.60 found from tests to be conservative for ragged and narrow openings. For round, smooth openings 0.80 coefficient has been found to be fairly accurate. This formula is combined with the necessary constants and reduced for convenient use to the form in which gallons per day is equal to a constant times the area of the opening in square inches multiplied by the square root of the pressure in pounds.

If the leak is on a service pipe and turned over to a plumber without being uncovered by the survey party, the pressure loss in the combined service pipe and tap is obtained by comparing hydrant pressure with pressure in the building corrected for elevation and the distance of the leak from the main is estimated by intensity of sound at the tap and in the building or otherwise. The length of that size of service corresponding to the size of tap uncovered is taken from a prepared table and added to the distance of the leak from the main. The pressure loss divided by this equivalent length of service gives the loss in pounds per 10 feet of service. With these data the flow in gallons per day is taken from logarithmic curves showing the gpd flow corresponding with any given pressure loss per 10 feet on the various sizes of services.

In the case of leaks sufficiently large to reduce the pressure on the system by an accurately observable amount, the pressure is obtained with the leak running and with the leak shut off. Subsequent to repair the same drop in pressure is produced by an adjusted flow from a nearby hydrant and the discharge of the hydrant measured with a pitot tube. Sometimes this pressure drop can be made sensitive by so arranging street valves as to supply the leak through a restricted feed or long length of small pipe. Occasionally a direct measurement is made with a Pitometer.

These several methods applied with variations are based upon tests and computations and at frequent opportunities are verified by actual measurements. The formulae and coefficients used are adjusted on the conservative side. Tap and service leaks, when they are uncovered and the defective part can be obtained from the plumber, are tested out at the testing station by weighing of the water and stop-watch timing of the discharge. Such tests have shown the computations to average fairly accurately and below 100 per cent.

Gaging of consumption of areas before and after waste surveys is not a dependable method of determining the saving accomplished, since the consumption due to changing weather or other conditions is apt to change daily or weekly by an amount equivalent to or greater than the total of the leaks repaired.

ACKNOWLEDGMENT.—From a paper presented before the American Water Works Association, at its 1934 Annual Convention.

Check Your City's Insurance

Every municipality having fire, automobile, or workmen's compensation insurance ought to check its policies. Particular attention should be given to ascertain that adequate fire insurance is carried. Equal care should be taken to see that the insurance is not being carried at a figure far in excess of the value of the building or contents insured. Many municipalities have studied their insurance situation recently and have found that they could bring extensive savings through revision of policies.

—From the September 1, 1934, *Bulletin* of the New York State Conference of Mayors and Other Municipal Officials, Albany, N. Y.

The Crisis in Local Government and the Task Ahead

By CHARLES A. BEARD

LONG before the depression began, indeed long before the nineteenth century closed, certain marked tendencies in local affairs indicated a coming crisis in local government.

I

The first of these tendencies was the steady decline in the economic independence of the American community and its increasing dependence on more or less distant markets for its very livelihood. There was a time, in the days of our grandparents, when nearly every community looked to its own natural resources and labor for the food, clothing, and shelter necessary to good living. It supplied nearly all these necessities by the labor of farmers, housewives, smiths, carpenters, masons, and other artisans. It needed little cash income to provide a good living for the members of the community. The state of business throughout the country and the world made little difference to the community and its government.

These self-sufficing communities and homesteads have practically disappeared. Men and women have lost the arts of farm and shop and have become specialists. Farmers have become one-crop farmers and they must sell or perish. Communities which have been industrialized are also dependent upon nation-wide or world-wide markets. They, too, must sell or perish.

In other words, communities have in fact lost their old economic independence. They must have a huge cash income drawn from outside sources beyond their control. They must sell or perish.

For example, the Connecticut farmer and his wife once provided their food, clothing, and shelter at home by their own labor. Now thousands of Connecticut farmers produce nothing but milk, apart perhaps from garden stuff. They must sell this milk to people living in cities. If they cannot sell, they perish, even though they are surrounded by the bounties of nature which once made their ancestors independent.

In truth, then, the American community has disappeared as an economic unit, as a community in the old sense. Even the most distant homestead is dependent on the functioning of American and world business in general. If the American business machine cannot run at full speed, then each community sinks in the economic scale.

It is this fundamental change which lies at the basis of the crisis in local government.

II

A second tendency in local government appears in the assumption of local duties by the state government and the Federal Government. Near the close of the nineteenth century it became evident to students that the state government was taking over in whole or in part, one after another, functions which the community had long carried on—education, highways, health, and care of the unfortunate, for example. The government of North Carolina, for instance, has taken over the construction and maintenance of all county roads in the state.

III

A third tendency in community life, long known to students of community affairs, has been a decline in the population and wealth of rural counties throughout vast regions of the Union—New York, Michigan, and Indiana, to cite examples. This decline has been going on for decades and has been recorded in the successive census returns. There are literally hundreds of rural counties in which there are not enough people and wealth to support township and county governments. Some are already bankrupt. Others are on the way to bankruptcy. They would have been headed for prosperity, if there had been no depression.

Herein, therefore, lies the real crisis in local government. Communities have been plunged headlong into debt by the very interests that now cry out against paying the bills. In this respect, two courses are open. We can tax ourselves and pay for our follies, or we can go into Federal courts under the new municipal bankruptcy law and make a compromise with our creditors.

That much is clear and relatively easy, though somewhat injurious to our pride.

IV

But beyond settling up past bills, lies the future. The economic independence of our communities has disappeared. And in the business crisis, thousands of them can only avoid collapse, disorder, and misery by securing funds from state and Federal governments, especially the Federal Government. In three states all local relief funds come out of the Federal treasury. In fourteen states practically all come from that source. Even New York City relies heavily upon the Federal treasury to keep its poor and hungry people alive.

We cannot go back to the old days of community self-sufficiency. History does not repeat itself in exact patterns. We face the future. New forms of local government must be devised and adopted—forms of government appropriate to the changes that have taken place. New relations must be worked out between the state government and the Federal Government on the one side and local governments on the other.

This task will call for putting aside our old notions and prejudices. It will call for knowledge of hard facts, for administrative skill of the highest order, for brains and the exercise of brains, for patience, and, above all, for courage. If these resources fail us, we cannot successfully cope with the crisis in local government. They will not fail us.

The concluding portion of an address by Dr. Beard in the ninth "You and Your Government" radio series, the program of which is listed on page 67 of this issue.

The Skyline and the Dungeon

Drawn for THE AMERICAN CITY *by C. D. Batchelor*

The Flowering and the Subsoil of Our Failure to Zone Against Congestion

Population Expectations, Zoning, Appraisals and Debt

By FREDERICK L. ACKERMAN
Technical Director,
New York City Housing Authority

THE Zoning Commission of Megalopolis with its technical staff had set up a tentative zoning ordinance. It had been drawn with great care so that the proposed restriction would not interfere with the "normal" growth and development of the city. Non-interference with normal growth was one of the cardinal principles that had been laid down by the spokesmen for zoning; and any proposed violation of that principle was frowned upon, as was any regulation which appeared likely to owners of property, or the spokesmen, to lessen the increments to property values that it was firmly believed would continue to grow uninterruptedly through time.

Hearings were being held in order to win the consent and approval of property owners. At these hearings it was made clear that the aims of the Commission really coincided with the aims of property owners; and the purpose of the hearings was to come to a clear understanding as to what had best be done, so that it might be written into the Zoning Ordinance in terms of Use, Height, Coverage and Bulk of Building.

To Make Zoning More Rational

While the amazing figures in the accompanying article relate to the city of New York, Mr. Ackerman's discussion of the fundamental weakness of zoning ordinances has all too general application to cities, towns and villages throughout the United States. With population experts predicting that the United States will never have more than 150 or 160 million inhabitants, and that this total may be reached by 1960 or sooner, there is evident need of drastic revision of zoning ordinances so that needless congestion and fictitious land values may not be predicated on expectations of city growth which cannot and ought not to be realized.

John Worth was the owner of a 50-foot lot and a house. The house had been built some years before he made his investment. He bought the house to live in; but there were other possibilities in mind when he made his decision. Megalopolis was growing; and he had read news items and the statements of auctioneers of undeveloped land as to how untold wealth had come to those who had bought and held their property while the tides of urban growth and change swept over them.

He attended the hearing when the zoning regulations covering the area in which he lived came up for discussion. He went with some doubt in his mind. He was not certain whether he should resist the proposal of the Zoning Commission to include his home and his garden within a business district. He had no desire to move; but there were arguments in favor of such a procedure that met with his approval. If the property for which he had paid a few thousand dollars were to appreciate ten- or twenty-fold in value because commercial interests might want it some day for commercial use—that was worth thinking about.

But friend John did not remain in doubt for long under the persuasive arguments of his neighboring owners and the well-organized salesmanship of the representatives of the Zoning Commission. Seemingly his purchase had been guided by intuitive judgment; apparently his property was directly in the path of a normal commercial expansion which he could not stop if he so desired. He would therefore voice his approval and give hearty support to the aims of the Zoning Commission in forwarding the interests of the community as a whole. By so doing he would be recognized as a good citizen—and he might come in for substantial profit.

When he acquired title to his home, he had insufficient resources; so he had placed as large a mortgage upon his property as the local lending agency would allow. No amortization was required, since it was assumed by both parties to the transaction that the property would shortly begin to multiply in value.

Time ran on; the commercial enterprises which he, along with his neighbors, had anticipated did not materialize. No one wanted to buy his property, although, as he realized, we were then sailing right into an unending era of prosperity and an unending building boom. He could afford to wait.

But, in point of fact, there was evidence all about him that the area in which he lived was losing population. His neighbors' houses had begun to look shabby, and every now and then a storekeeper in the neighborhood folded up and moved away and no one came to occupy the store which had been vacated. This was not in accord with the optimistic prophecies that had been made at the hearings, nor did it check with what he read about the prosperous times in which we were living.

A Dream Gone Glimmering

Then came the crash of 1929!

John Worth's experiences had been confined to a little plot of land 100 feet deep, with a 50-foot frontage. The depreciation of the area would probably result in the loss of his savings. That would be too bad for John, but taken by itself it would not be considered a matter of great moment. Unfortunately, however, his experience was typical. Every owner of a plot or piece of property, with the exception of a relatively insignficant number who preferred to continue to live in the houses they owned, was eager, when the zoning ordinance was up for consideration, to have his property placed in that category of the ordinance which gave the greatest promise of increasing in

value owing to the promise of a change in use.

The expectation of an increase in value on the part of the individual lot owner, and the resulting action in zoning his property, may not seem important when considered by themselves. But when one takes the sum of all such expectations and expresses them in quantitative terms such as the total value of buildings or the population that would occupy them, the result of such a summation is a fantastic figure. In the five boroughs of the city of New York, for example, the sum of all individual expectations thus expressed amounts to a volume of building the impossibility of which is evident from a study recently completed. This shows that if New York City were to be built up to the full density permitted under the zoning ordinance, with no new building over 600 feet in height, the capacity of the residential districts would be approximately 77,000,000, while the commercial districts would provide for a working population of 344,000,000! In certain older sections of Manhattan and Brooklyn specially studied, about 900 years would be required for the land now used for business to be built up to the maximum bulk permitted by the zoning law at the same rate of increase as obtained for the city in the ten-year boom period after the war.

Again, merely to *expect* that a single city would some day have a working population of 344,000,000 might not be very serious if that ended the matter. But consequences follow upon the heels of such beliefs and expectations, for millions of people act upon them: they serve as the point of departure for a long train of events. It was upon such unwarranted assumptions and expectations that we proceeded prior to 1929—and are in danger of proceeding again—to erect our urban financial house of cards.

These expectations as to growth, which footed up to the total expectation that every American city would some day have an impossibly and undesirably large residence and working population, constitutes the criteria upon which property appraisals have rested and upon which appraisal still too generally rests. Loans were advanced and debts were incurred upon this fantastic measurement of our expectations.

The dominant criterion under which John Worth gambled his savings and assumed a debt was the same as that under which the lending institutions accepted him as a borrower, but with less risk. The criterion was derived from the received expectations of *growth.* That very simple calculations would have served to demonstrate conclusively that the expectations were without foundation and therefore absurd may be readily shown. In point of fact, such calculations were sometimes made at the time that zoning ordinances were in process of formulation, but hardly any one paid the slightest attention to them—such was and is the faith in "constant" growth. We brush aside the fact that total population has been growing with a decrement for a quarter of a century, and pin our faith on the hope that the growth of population will change.

Fantastic Zoning, Fantastic Debts

But to return to John Worth and his loan. That transaction was but the beginning; it set moving a long train of consequences. Appraisers of real estate accepted these criteria in making their appraisals and pushed expectations up to a higher order of magnitude. Tax assessors accepted the appraisals along with the entire body of belief as to accelerating growth, and upon these beliefs taxes were collected—for a time. And it was upon the sum of the assessed valuations thus derived that the city fathers proceeded to erect the towering structure of municipal debt upon a fantastic belief as its sole foundation.

Naturally, we do not like to admit that there is a direct and immediate connection between our urban debt, public and private, and these absurd expectations of growth. But there is: they stand in a direct, casual relation. The debt structure represents the capitalization of our expectations; it has no other meaning. If our expectations are fantastic or absurd, it would seemingly follow that debts created in the interest of capitalizing these expectations would be of the same order, that is to say, fantastic or absurd. And that may be said of appraisals and valuations: they are merely absurd expectations expressed in dollar valuations.

It will be said, no doubt, that the illustrations here employed to give meaning to figures and magnitudes are far-fetched: physical conditions would preclude the development of such a state of affairs as are suggested by the sum of our expectations. It is true, no such magnitudes as represent the sum of our expectations are possible. But—and this is the point of this note—these densities and these magnitudes are possible within very limited areas. And experience has demonstrated that where these have been developed, it is invariably at the expense of the rest of the community. It remains to be seen whether or not those who have sponsored these high concentrations, densities and great magnitudes have not also lost by their action. This much may be said: their position is highly precarious.

Whatever the final outcome in the case of those who ventured and those who did not, it may now be stated as a fact that zoning, as practiced in the United States, constitutes control only in respect to actions whose control is of secondary importance. Activities which it would have been imperative to control, if chaos were to be avoided, have been left in perfect freedom. It was the limitations of technology and science, and not the restraint of zoning ordinances, that prevented finance and business from embarking upon still higher flights of imbecility. By throwing great residential areas into the greedy maw of speculation and investment for a profit by zoning them for business and industry, we condemned them to blight and decay.

And the grim joke about it all is this: as limited areas develop concentrations that would be physically impossible over larger tracts, it follows as inevitable that the areas of high or low densities are doomed to meet financial failure, for both are built upon assumptions as to growth that have no meaning in a world of reality.

New Series of Harvard City Planning Lectures

A lecture on "Social Betterment: the Aim of City Planning," by John Ihlder, Secretary of the Washington, D. C., Committee on Housing, on September 28, was the first of the series of public lectures on city and regional planning to be given at the Harvard University School of City Planning during the current semester. The lectures are from 11 to 12 A. M., and are a regular part of the course in "Principles of City and Regional Planning," under the direction of Assistant Professor Howard K. Menhinick.

Among the subjects to be covered in the series are low-cost housing, building heights, railroads in the regional plan, the Tennessee Valley project, state and national planning, and present trends in planning.

The subsequent lectures are:

October 29—L. Segoe: "Railroads in the Regional Plan."

November 25—Edward M. Bassett: "Limiting the Height of Buildings Through Zoning."

December 3—Henry Wright: "Site Planning for Low-Cost Housing."

December 10—Richmond D. Moot: "Schenectady's Official Map."

January 11—Earle S. Draper: "Regional Planning in the Tennessee Valley."

January 14—Charles W. Eliot 2d: "State and National Planning."

January 16—Harold S. Buttenheim: "Trends in Present-Day City and Regional Planning in the United States."

No Laissez-Faire in Grand Haven

By LIONEL HEAP
Mayor, Grand Haven, Mich.

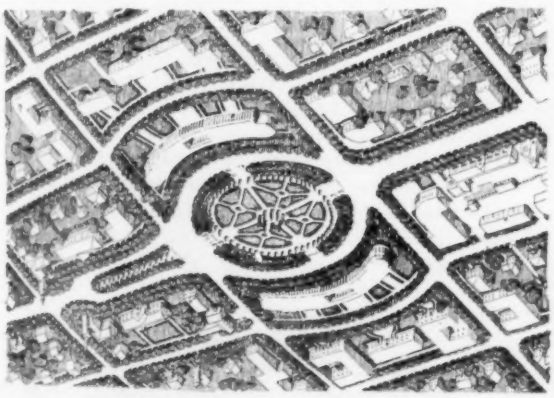
GRAND HAVEN, a city of 9,000 population, intends to be a planned rather than a hodgepodge municipality, and to extend this planning to social as well as physical features.

When any physical development or alteration is to be made involving the esthetic side of the city's life, the matter goes first to the city's landscape architect, who puts his design upon paper. This design is then submitted to the city manager for a check-up as to the engineering features and, if approved by him, goes to the Park Board for consideration and approval, and finally to the City Council. Once adopted, a plan or design cannot be changed unless the change goes back through the original routine and is approved. A rigid zoning ordinance abets the municipality in its effort to keep control of the city's future.

All too many cities concentrate upon industrial development and growth of population, but Grand Haven believes that it can confer no greater blessing upon its people than to immerse them in beauty. The city has a long waterfront; in fact, river and lake almost completely encircle it. Few cities have such a setting. Grand Haven had prostituted this waterfront to vulgar purposes, crowding coal piles and freight sheds upon it. She had used a flute to beat a carpet. But she has awakened to her crime. A well-designed parade ground for the U. S. Cutter Escanaba is the first stage of penitence and loftier vision. The waterfront is to be beautiful and made a park from Lake Michigan to a point well up the river. This can be done without robbing the city of dockage, because there is a large island, lying in the center of the river, adjacent to all important points in Grand Haven, yet screened from sight, upon which can be placed all the necessary ugliness of a moderately large city.

The river and lake encompass two-thirds of the city: the southern boundary completes the framing. It is planned to make this southern boundary a magnificent, 200-foot-wide boulevard. Under arching elms will be two main drives, two service drives, two bridle-paths and two footpaths, and down the center will be a wide planting of flowering crab trees. With the completion of this boulevard, whichever way an automobilist enters the city, whether from the north, across Grand River bridge, or from the south, meeting the boulevard, he will be impressed that here is an exceptional city—definitely, distinctively and beautifully delimited.

GRAND HAVEN'S PRESENT CIVIC CENTER
A narrow parking runs down the center of the street and would be broadened out into the circle shown in the drawing for the year 2034, below



VISION OF GRAND HAVEN'S MUNICIPAL CENTER A CENTURY HENCE
The above sketch was drawn by Robison Heap, architect. Included are three blocks of Washington Street, between Third and Sixth. The new City Hall and Fire and Police Department, also the Congregational church and Bell Telephone building are indicated. The semicircular buildings facing the Park are a new courthouse and a similar building opposite which will house a library, an art gallery and a historical museum

Most cities are attractive chiefly where the wealthy establish themselves. Grand Haven will strew large effects of beauty where the humbler homes spread out. The city may be divided roughly into a hill section and a flat section. Affluent homes have preempted the former, and here beauty is almost inevitable. Working homes occupy the lower levels, and every effort will be made that this section shall not grow up into monotonously rectangular blocks.

But landscape architecture is not the only art fostered in Grand Haven. Beauty in the home, dancing, music, the drama, painting and sculpture—all come within the city's purview and encouragement. The city is negotiating to secure an old, unused Congregational church of excellent location and architecture, with the intent of converting it into a handicraft workshop with a room reserved for music, where the best records may be heard and where the civic band and civic orchestra will rehearse. In the handicraft workshop there will be rug-weaving, copper-hammering, quilting, book-binding, basketry and pottery. The articles made will add color to the makers' homes or will be sold to summer visitors, of whom nearly two million visit Grand Haven during July and August.

Climaxing this movement toward the fine arts will be the development of a large outdoor natural amphitheater which lies among Grand Haven's sand dunes, just back of a ridge skirting the river. One-third of this bowl is wooded, providing a striking and lovely background. The re-

mainder of the bowl will be lined with seats, tucked away as inconspicuously upon the hillsides as possible so as not to suggest the conventional, commercialized stadium. The amphitheater will be used as a summer school of the fine arts and for pageants and concerts. The stage will be large enough to hold several hundred performers.

A Recreational Association has been formed in Grand Haven which intends to bring the opportunity of play and physical exercise to all the citizens, young and old. The municipal government is enthusiastically back of this association and contemplates making its board of directors an official board of the city. A 15-acre tract is in process of being developed into a large athletic center. Plans already completed for this area include tennis courts, softball diamonds, a regular baseball diamond, a football field, croquet courts, a children's playground, and a building which will house a skating rink, a gymnasium, a swimming pool, billiard and lounge rooms and a restaurant. This building will be the clubhouse for the people of Grand Haven.

Tax Reduction and the Fire Department

By **PERCY BUGBEE**
Assistant Managing Director, National Fire Protection Association

MOST municipal administrators appreciate the fact that we are facing a period of insistent and persistent demand by the taxpayer for more or less drastic municipal economy.

In nearly every city, fire and police departments make up a very substantial proportion of the city budget. It appears inevitable, therefore, that these departments will be subjected for a period of some years to come to a thoroughgoing investigation with a view to reduction of expenses. While up to the present time, except in a few cities, there have not been serious reductions in fire department strength, and while in most cases salary cuts imposed on all municipal employees alike have been the principal form of reducing fire department expenditures, it appears that this is an opportune time to discuss a few of the phases of reduction measures that are most likely to face municipal officials.

Salaries are the principal expense items of the fire department budget. The average fireman is willing to take his share of salary cuts, but it is obvious that if this department is singled out for special cutting or if the cuts are carried too far, as they have been in some cities already, the effect on the morale of the department is very dangerous. It would be comparatively easy for a disgruntled or discouraged fire department to slow up its attack on the fires that occur. The discouraged fireman could very well feel, perhaps subconsciously, that a few big fires might make the people appreciate more the worth of the department to the city.

There may be a few cases in some of the larger cities where real economies may be made by careful and intelligent study without seriously affecting the fire protection. It ought to be remembered, however, that in a very substantial number of cities fire departments have never been adequately manned and further cuts in personnel or closing of fire stations might readily lead to a disastrous conflagration. In all too many of the excellent engineering reports on cities by the National Board of Fire Underwriters, there appears the following statement: "The fire department continues to be under-manned, under-officered, under-equipped and under-trained and is inadequate for the proper protection of the city." When a city in this category starts to further cut its fire department, it is on dangerous ground.

It should always be borne in mind by the city administration, or by a taxpayers' league that is demanding economies, that a serious mercantile or industrial fire in the city means loss of taxes, loss of employment and corresponding increase in the welfare lists, and perhaps permanent loss of the project with its permanent effect on the welfare of the people as a whole. Drastic economies in the fire departments, too, may adversely affect the insurance grading of the city, with consequent increase in insurance rates which may mean possibly no net savings whatsoever to the citizens.

Other effects of the long-continued depression should be considered. Fire equipment in many cities is getting old and unreliable. There has been no adequate program for replacement, or if such a program existed in good times it has been dropped. Politicians are hungry for good salary jobs, and the job of fire department chief, if subject to political control, may be looked upon as a good berth for a man totally disqualified for this service. Some cities have made such political appointments of fire chiefs in recent years and they will have cause to regret it—if such is not already the case. In this respect the campaign now being carried on by the International Association of Fire Fighters for better civil service provisions for fire department officers and men is most meritorious and deserves recognition and support.

In times of demand for economies the mis-named frills of the fire service are likely to suffer. Fire prevention bureaus carrying on vital inspection work to reduce losses and hazards, arson squads, salvage squads, even drill masters and drill work, are likely to be thrown overboard as unnecessary fire department functions. These activities, if studied, in nearly any city will show that the cost of maintaining them is of insignificant proportion to the total fire department costs and that the work of these bureaus or squads may help materially in keeping losses down.

Progressive fire chiefs have of course recognized what is ahead. They are making efforts, therefore, to publicize their departments in the proper way, so that the people in the community will recognize the vital work of the department; but the chief is helpless if he doesn't have the sympathetic support of his mayor, city manager, and city council. The principal obligation of those having to do with the administration of fire departments is to refrain from being influenced by public pressure or demand for reductions without a most careful study of the situation and consultation, if possible, with experts in the field. Cities can and will economize, but must not lose sight of the fact that fire protection is a vital city service and that the lives and property of the citizens cannot be neglected.

The Future of American Cities

Someone Has Described the Typical American City as "One Vast Speculation in Real Estate." Less and Less Must This Be True in the Days That Are Ahead. The City Cannot Continue a Field of Exploitation If We Are to Have a Sound Urban Life

By **C. A. DYKSTRA**
City Manager of Cincinnati, Ohio

HE is bold who ventures to suggest the character and the quality of the city of the future. It is possible to predict some of the physical trends and perhaps the industrial. But what the human city will be will depend in the last analysis upon the changes which will come in our thinking. For as a city thinks, so it will be in spite of physical and industrial forces—or perhaps better, because of its control of such forces. There are some facts which are apparent enough to suggest an approach to the problem:

1. We are gradually approaching the time of maximum population—a period of stabilized numbers. Population students tell us that by the decade of 1950 to 1960 we may expect the census figures to remain relatively constant. It would seem that the day of immigration is over and the time of small families has come. There is no economic reason for an enlarging population. Furthermore, city populations are growing older.

2. Many cities which have no real physical roots are likely to lose population and perhaps die.

3. Cheap electricity and long-distance transmission, together with cheap transportation by public highway, make for some form of decentralization and a suburbanization of populous centers.

4. On the other hand, a rational economic development cannot mean a general "back to the land movement." Agriculture as a business cannot absorb any more workers or proprietors. Agriculture as a way of life is attractive for the most part only to those who have a competence or an income from a non-agricultural source. In other words, we are industrializing and mechanizing agriculture and at the same time urbanizing rural life. Thus we seem to be merging and consolidating the advantages of rural and of urban life. The city goes to the country with good roads, machinery, the telephone, gas, electric light, the radio, bathrooms, and much more, and the country comes to the city with light, air, open spaces, health, and fresh markets. And transportation is the link between them. There can thus be no economic or business reason for a return to agriculture unless we are to confess that most of us are to live on an agricultural subsistence level. Such a confession is tantamount to an admission of the failure of inventive and educational progress.

5. There are enough social advantages in city life—that is, in the urban way of life—to lead us to believe that we will conserve them without question. With all of his enormous popularity and personal appeal Gandhi has made relatively little progress in turning the clock back to hand processes. The machine is here to stay, and the machine is the industrial symbol of the urban way of life. If we can substitute spaciousness for dirt and congestion, city life will retain its lure for the majority.

6. The increased leisure which is upon us, if only it becomes voluntary rather than enforced leisure, guarantees the future of urban populations. Man is a social animal and he insists on being with his fellows. Throughout history he has congregated in cities for mutual aid and satisfaction whenever he could be released from the daily business of producing food. As food production becomes a minor interest in his life, he will do what he has always done—seek other satisfactions in company with his fellows.

7. The arrival of comprehensive planning, and this includes zoning, will continue to stabilize city populations and the values of urban life. Eventually we shall recognize that planning is not a fad nor a plaything of so-called intellectuals, but a fundamental human and social need. Every interest, whether economic or social, is bound up in this prime necessity of our lives. Indeed, only as city planning becomes regional and national planning can we hope to avoid the chaos which continually threatens us. Those who have lived in tropical clearings know how the jungle returns to recapture and set at naught the work of man. So our urban life is threatened with extinction unless we plan to conserve the values which we create.

Conclusions from the Foregoing

Some tentative conclusions suggest themselves if there be some agreement as to the statements just made. And these have some bearing on urban development during the next few years:

1. If cities are to grow rapidly, as many have during the last generation, they can grow for the most part only at the expense of each other. Natural growth will come only if the natural advantages of location or environment are more or less outstanding. New inventions which meet new needs will bring new industrial establishments to fortunate communities, but there seems little reason for expecting that industry will continue to concentrate further in our larger cities. The reasons for such concentration are no longer valid. This is one way of expressing the tendency which is so often called the decentralization of industry.

2. Present cities of considerable size are becoming the focal centers of an urban and semi-urban area of large proportions. What we now call a metropolitan area will take on some of the physical and social characteristics of the ancient and medieval city-state. Whether these regions will become politically unified and have any corporate entity will depend upon the rapidity of social and economic integration, the development of planning on a large scale, and the breaking-up of provincial thinking. In any event we may look forward to the time when there will be much less agricultural land in crop cultivation within such areas, and much of the open land given over to forest, park, and recreational spaces.

3. Within the old corporate limits of the concentrated city there will come an irresistible movement for slum elimination. The slums will give way to well-planned sections of houses and to open spaces which make life tolerable and attractive for those who still must work in the heart of the city. Trees will come back and grow where our grandfathers built cobblestone pavements. The small rectangular block will give way to super-blocks of varying shapes and designs, and the area now given to streets will be cut down drastically. As elec-

tricity replaces steam power for industry and heating the "old" city, the "basin" or the "loop" will no longer need to be smoky, dirty, and unsanitary. It can become again what it once was—a desirable and close-in place to live.

4. Cities must be places in which to live as well as work. This must be the concomitant of shorter hours and the use of machines in industry. Urban life must tend to be one of considerable voluntary leisure, and city people will have adequate opportunity to join in all of those things which advance the culture and harmony of city life.

5. Fundamental for such an urban life is adequate income and social and economic security. As we have time on our hands, our desire for the fuller life develops and a demand for a higher standard of living makes itself felt. Thus grows the insistence for more comforts and more things. To industry and business this raising of living standards is the bread of life. It should also carry the warning that of supreme importance in any consideration of the city of the future is the working-out of the method by which sufficient income can find its way to all. For purchasing power is the fuel of the industrial world we have set up. Modern industry cannot operate without it. It thus goes without saying that in a world of machines, cities as aggregations of human beings will disintegrate and die if there is not a steady, sure, and constant increase in purchasing power.

6. With the stabilizing of city populations and the general acceptance of the fact that growth in numbers cannot continue at the old rates, we shall become more rational in our attitude towards land and land values. We shall see that land which is not used contributes nothing to the value of urban life. We will then begin to put land in its place and find its true function. There will be common agreement that the day of land speculation is drawing to a close. Delinquent taxes on vacant lots in a hundred cities are eloquent testimony as to what is coming.

Other Important Trends

Certain other tendencies seem to follow with good reason:

1. Real estate values will fall in our least desirable sections and in undeveloped areas. This means an impetus for slum rehabilitation, for it is increasingly apparent that it is the inflation of land values that maintains the slum and retards low-cost housing developments.

2. Our present theories of real estate taxes will need reconsideration.

3. The vertical expansion in our central business districts will be slowed up.

4. Much land now held for commercial and industrial purposes will not find any such use. This may also become true of residential areas as families get smaller and the population gets older. For instance, in 1930, 23 per cent of our population was 45 years of age and over. Within the present century this percentage will probably double as our population numbers become static.

5. It may follow that future building will come in the field of smaller and perhaps semi-detached houses, and doubtless in newer types of multiple dwellings.

6. There will be much less shifting of families and therefore more stability in neighborhood life as the average population age increases.

7. The demand for extending public facilities of certain types will slow down. For instance, we shall need fewer *new* school buildings and utility main extensions. On the other hand, we shall find a demand for more institutions for old people and more recreational areas.

8. The demand for transportation of all kinds will increase as leisure increases. Transport will come to be of greater and greater public interest.

The Challenge of the Future

Just at this moment the city trembles in the balance. Its citizens are in large numbers unemployed, its finances are in chaos, its services and its structures are deteriorating, and both public and private hopes are sagging. We begin to realize that somewhere we missed the mark or took the wrong turn. Apparently our material prosperity of the last generation either was illusory, or was obtained at a tragic price. The transformation of millions of workers into automatons brought its toll when machinery itself became automatic. With the disappearance of artisanship we lost certain conceptions which have always been basic in civilization. The industrial city to date has not proved its place in the sun.

But—the machine age is here to stay. It must be whipped into condition to serve human needs. Something will have to take the place of the handicraft world which after all did create beauty and some serenity, even though it may have done little to better general living conditions.

The mass of mankind has perhaps been ill served through the centuries by human institutions. Human intelligence has made it possible to bring to all of us in cities a better individual and a better community life than has ever existed on this globe. The city is not to be a menace as Jefferson thought. Whether we like it or not, the national economy of the future will be controlled from urban centers and by urban conditions. Urbanism will dominate the future. Since we cannot recapture the pre-machine age, our obligation is to make the machine age safe for the future city. Planning on a large scale, with technology as a basis, furnishes our hope. We must stand fast in the presence of the machine and explore its significance.

In our dreams the city of the future is something beautiful, with a plan of growth and a contented and happy people. It is a balanced structure full of opportunities for work and play. There is enough industry to provide for the needs of all, but not so much that we cannot use our products for lack of purchasing power. The machine has become the servant and not the master of man. It is a civilization that we are creating, a harmony of the necessary and the good things of life. So let us have a comprehensive plan and a pattern to work to. Let us reconstruct our slums and rehabilitate our blighted areas. Let us organize for civic achievement as we have been doing for business and industry. Let us measure our city not by size or by numbers, but by its results in terms of human beings who stay young, who have a zest in life, who are gay and spontaneous. We may even recreate a public life of fêtes and ceremonies when the city becomes a source of pride to all of its inhabitants. In any event, we have the materials out of which to build cities of glory and grandeur. We need only the conception and a new attitude toward our problem.

We in America have not yet scratched the surface of the possibilities of life for all—a life promised by our boundless resources. We have yet to plan the framework for a future of abundance. Let us set about this planning —comprehensive planning—with good will and courage, and let us begin now.

—Excerpts from an address before the American Transit Association at its convention in Cleveland, Ohio, September 24, 1934.

How Much Sewage Sludge?

By FRANK WOODBURY JONES

Sanitary Chemist,
George B. Gascoigne, Consulting Engineer,
Cleveland, Ohio

TRITE, but true—sludge is still the tough problem for the sewage plant operator. Odors come and sometimes go, effluents join the brook and go on forever, but sludge remains, in one form or another, a constant reminder that the sewage of a community carries a tremendous quantity of bulk solid matter, which silently settles out and accumulates oftentimes to the point of saturation and subsequent impairment of plant efficiency.

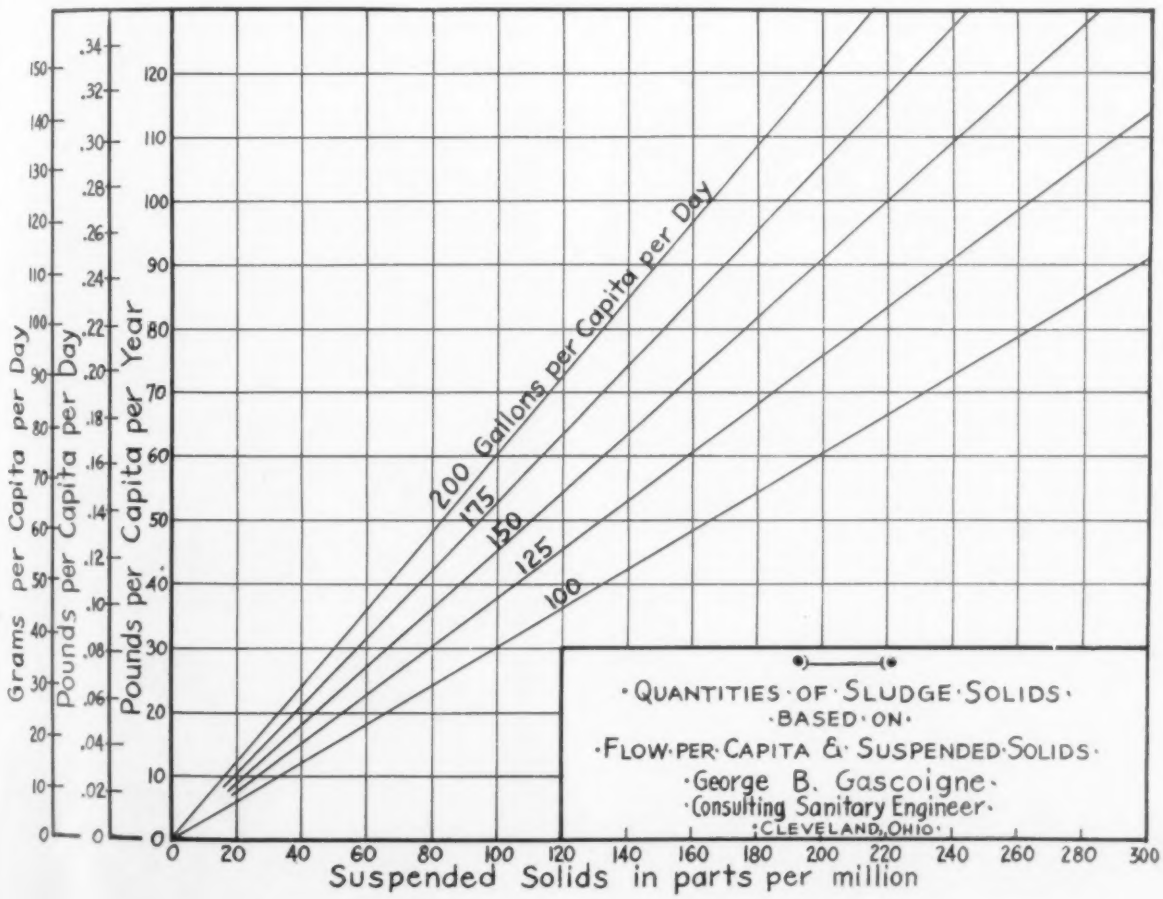
Notwithstanding the importance of proper sludge disposal, and in spite of all the schemes devised and practiced for getting rid of this residue, it is to be regretted that our operating data contain less detailed information on this phase of sewage treatment than on any other. True, we make numerous determinations of moisture, pH and volatile matter, yet a proper correlation of all the factors involved is woefully lacking, and any attempt to draw conclusions demands liberal interpolation and interpretation of the data available. As illustration of the neglect to include sludge disposal data, an otherwise excellent sewage plant report of recent date dismisses this phase of the operation in a terse short paragraph, thus:

"A total of 44 beds of sludge was drawn from the tanks during this year and a total of 15 beds of scum. All sludge drawn was well digested, dried out quickly and had no pronounced odor."

It may be seen, therefore, that the assembling and presentation of sludge data present difficulties beyond immediate control, and in consequence many conclusions must be based on judgment and experience.

Source and Quantity of Sludge Solids

Any effort to provide for sludge-disposal facilities should first include an estimate of the quantity of solids to be handled. In this connection the facts are often overlooked that the degree of treatment influences sludge production, and that the amount of sludge from partial treatment will not be as great as from complete treatment. Moreover, the type of treatment has marked effect on the weight and character of the bulk solids deposited. The amount of moisture mixed with these solids determines the volume of sludge to be handled. Since doubling the per cent of solids halves the volume of sludge, the value of the efforts made to secure concentrated sludge is at once apparent.



The starting points in sludge solids estimates are: accurate measurements of sewage flow; tributary population; and the determination of suspended solids of the raw sewage and of effluents from the various steps in the treatment process. Without commenting upon the ramifications and irregularities of the suspended solids test, our own experience leads to the conclusion that with proper attention to details of sampling and analytical technique a true representation of sludge production in the plant can be obtained in the laboratory, provided frequent tests are made over a sufficient period of time.

The sludge of various kinds and the overflow liquors should also be carefully sampled and analyzed, and the quantities of total solids so obtained should be checked frequently against the sewage analyses; otherwise anomalous results are sure to appear.

From the analytical and physical data, computations may be made of the quantities of bulk or sludge-forming solids contained in raw sewage. The accompanying diagram has been prepared to show the quantities of sludge solids based on suspended solids in parts per million for various per capita flows. With basic data, including total sewage flow, tributary population, and total suspended solids, the quantities of dry sludge solids may be expressed in any form to suit the individual fancy.

A study of the curves reveals graphically the wide fluctuations in the quantities of sludge-producing solids in sewage of varying characteristics. The curves demonstrate also how misleading it is to use parts per million of suspended solids without the correlating values of total flow and tributary population.

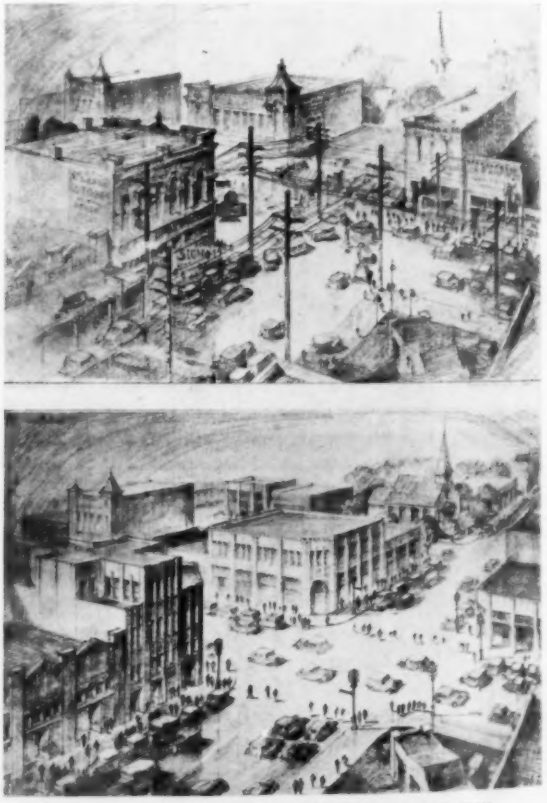
ACKNOWLEDGMENT.—From a paper presented at the Eighth Annual Conference of the Pennsylvania Sewage Works Association.

Visualizing Possible Rural and Urban Transformations Through Proper Planning

CONSTRUCTIVE imagination is a faculty that planners find effective in appealing to public interest and support for needed improvements. This is well illustrated in recent issues of *Planning News*, the publication of the Pacific Northwest Regional Planning Commission of Portland, Ore., from which the drawings below have been reproduced, and from which the following, among other forceful comments, is quoted:

"In any city or community the general civic success or failure—orderly growth—the public safety—the civic pride—depend on "The Plan." No amount of money expended on buildings, no amount of honest sales effort or promotion by realtors or other individuals will make a poorly planned community good. If the plan as a whole is not good, the progress of the city will be as that of a ship without a course. In contrast, "The Plan" will provide objectives and a charted course, permitting progress with minimum waste in time, energy and cost."

A DANGEROUS ROAD WITH ITS OLD COVERED BRIDGE AND EYESORE ROADSIDE DEVELOPMENT COULD BE TRANSFORMED INTO A SAFE AND BEAUTIFUL HIGHWAY



THE INTERSECTION SHOWN AT THE TOP "JUST GREW." IT COULD BE RECONSTRUCTED THROUGH PROPER PLANNING AS SHOWN IN THE LOWER DRAWING

Lotteries for Public Revenues — A Medieval Throwback

By MABEL L. WALKER
Executive Secretary, Tax Policy League

WE make progress slowly. Discredited institutions of one century, thought to have been permanently abolished after a long struggle, are revived in later centuries and the battle has to be fought all over again.

A generation that is staging a widespread reversion to the obnoxious general sales tax is now threatening also a return to the even more discreditable lottery. Perhaps the salt tax and the window tax will be along any day now.

Historical Sketch of Lotteries

Lotteries originated in Italy during the Middle Ages. They were at first used in connection with commodities when merchants disposed of their wares by means of a lottery procedure. Such lotteries, aided by permissive interpretation of church law, spread rapidly throughout Italy and were very common by the beginning of the sixteenth century. Commodity lotteries were established by various cities in Holland in the fifteenth century.

The first money lottery was probably established in Florence in 1530 for the benefit of the state. The lottery soon spread to France, Spain, Germany, and Austria. Sovereigns seized upon it as a revenue device and established a monopoly. Queen Elizabeth introduced the lottery in England in 1569.

After the French Revolution the lottery began to be opposed by liberals as a disreputable source of state funds. It was abandoned in England in 1826; in Hesse in 1832; France, 1836; Sweden, 1840; Bavaria, 1861; and Switzerland, 1865.

At the beginning of the twentieth century state lotteries were still in existence in Prussia, Italy, Saxony, Hamburg, Spain and Hungary. The subject of its abolition was being constantly discussed in Prussia, however.

Lotteries were introduced into America from England during the seventeenth century by Virginia and became widespread in this country in the early part of the nineteenth century. The Continental Congress in 1776 authorized a class lottery for the benefit of soldiers in the field. George Washington is reported to have invested in lottery tickets with some success on more than one occasion. Most of the nineteenth century lotteries were for education. Columbia University, then King's College, was founded on the proceeds of lotteries, and the construction of some of the Harvard buildings was financed in this way. They were also used to rebuild Faneuil Hall, Boston, after it was destroyed by fire.

New York and Massachusetts prohibited lotteries in 1833. Other states followed their example. In 1890 Congress prohibited the use of the mails for lottery purposes. The last of the privileged lotteries, the Louisiana State Lottery, which had been operated by a private company under a franchise bringing the state $40,000 a year, then transferred its operation to Honduras, where it is still in existence.

The lottery movement seems, however, to have had a rebirth during recent years. The United States, England, Canada and Japan are the only important countries now without national lotteries.

France reverted to a national lottery in 1933. L. M. Hussey, writing in the current issue of *Harper's*, declares: "It seems clear that the present French lottery was born by a certain amount of political chicanery out of a pressing need for money. So its parentage is not entirely respectable." Two million lottery tickets at 100 francs each were sold the first year. The French Government turned back 120,000,000 francs in prizes and retained 80,000,000 francs for the treasury. Hereafter, the ticket issue will be doubled, but 60 per cent of the money paid will still be returned in prizes.

Spanish lottery tickets may be sold in subdivisions amounting to only ten cents each. Sweden uses its lottery money for cultural advancement of the nation, Turkey for buying airplanes, and Iceland for its university. The U.S.S.R. sanctions such lotteries as might be approved in each individual case by the People's Commissars for Finance and for Workers' and Peasants' Inspection. The government conducts no state lottery.

Current Lottery Proposals in the United States

Once again America is picking up the lottery enthusiasm from Europe. Four legislatures — Pennsylvania, Maryland, Maine and Massachusetts, considered lottery bills last winter and will go into the matter more thoroughly this year. In Virginia a Unitarian minister is urging a state lottery. Governor Horner of Illinois has been studying different plans in an effort to find one not ruled out by the state constitution. A Federal lottery to raise $1,000,000,000 a year for veterans' benefits will be proposed to Congress by Representative Kenny.

District of Columbia Commissioner George E. Allen has suggested a lottery program for relief funds in Washington. E. Lester Muller, President of the Baltimore City Council, is sponsoring a movement to have lotteries legalized in Maryland.

The New York City Proposal

The New York Municipal Assembly voted for a form of municipal lottery on September 18, 1934. As this article is written, the Mayor's decision has not been announced. The plan, which was sponsored by Borough President James J. Lyons, is as follows:

A membership league to be organized by outstanding public-spirited and charitably minded citizens of New York. The object of the League is to raise funds through the dues of its members for the purpose of helping the unemployed and

easing the hardships of other needy persons in the city of New York.

Any person actuated by a desire to voluntarily aid the distressed is eligible for membership, provided such person is over 21 years of age, and subject to payment of dues stipulated hereinafter. Any such person may hold as many memberships as desired. All memberships are to be of six months' duration unless otherwise fixed by the board of trustees. If deemed advisable, the board of trustees may issue fractional or partial memberships under such circumstances as they may prescribe.

Dues for a six months' term of membership, or such other term as may be fixed by the board of trustees, shall be $2.50 for each full membership. The secretary of the board of trustees shall issue a card which upon its face will give the member's name and address and shall indicate membership in good standing in the league.

The Mayor of the city of New York shall appoint twelve outstanding citizens not in the employ of the city of New York as directors to serve without compensation. Such directors shall aid the trustees in the organization of the league and advise in the management of its affairs.

There shall be a board of trustees, which shall consist of the eight members of the Board of Estimate and Apportionment: each member to have one vote. Said board shall have custody and control of all funds of the league. All are to serve without compensation.

All officers and other employees are to be taken from the membership rolls of the league. They are to be selected in the same manner as jurors are chosen, viz.: The names of all members are to be placed in a large jury wheel and the first name withdrawn shall be considered the president of the league, the second the vice-president, and so on in the respective rank of the position as determined beforehand by the board of trustees.

The board of trustees shall allocate a definite percentage of the receipts from dues to be used for the payment of the officers and other employees. In no case shall more than 44 per cent of the receipts be expended for compensation of the selected officers and employees. Generous salaries shall be assigned to each position.

The rather novel features of the plan were devised in the hope of escaping the legal prohibitions against outright lotteries.

Opposition to the plan is widespread, particularly among religious groups. It is being denounced as an "insult to the needy," "shameless," and the "worst piece of political hypocrisy recently proposed in New York." Several charitable organizations have joined a drive against the plan. Mayor La Guardia is reported as "cool" to the proposal. There is, moreover, considerable doubt as to its legality.

Legal Status of Lotteries

Lotteries are now prohibited by the constitutions of most of the states, and by statute in all of them. In addition to prohibiting the use of the mails for lottery purposes, the Federal law also penalizes the importation, interstate transportation, traffic transit over any part of the United States, and receipt of all printed matter pertaining to a lottery.

The constitutional prohibition against lotteries in New York State is contained in Sec. 9, Art. I, as follows: " . . . nor shall any lottery or the sale of lottery tickets, pool-selling, bookmaking, or any other kind of gambling hereafter be authorized or allowed within this state; and the Legislature shall pass appropriate laws to prevent offenses against any of the provisions of this section."

The constitutional provision is supplemented by provisions of the Penal Law. It is made a crime to contrive or assist in a lottery, to sell lottery tickets, to advertise a lottery, to keep a lottery office, to let a building for lottery purposes. Furthermore, money paid for lottery tickets may be recovered by action, prizes won in lotteries are forfeited to the use of the poor to be recovered by suit of the overseers of the poor, etc. A lottery is declared unlawful and a public nuisance (Penal Law, sections 1370-1386).

Archibald R. Watson, former Corporation Counsel of the city of New York, recently declared with reference to the legality of the proposed plan:

"The policy and provisions of the New York constitution and laws prohibiting lotteries are now so well settled and understood as to render it unlikely that they will soon be reconsidered upon grounds of mere expediency or even as a means for raising needed public funds.

"Furthermore, it is difficult to escape the conclusion that any person or persons organizing, promoting or operating a lottery for whatever purpose would be guilty of a technical violation of the New York penal statutes, so long as these remain in their present form. Criminal liability under the Federal laws would depend primarily upon the use of the mails."

Objections to Lotteries

Henry Carter Adams, an eminent authority on public finance, declared in 1898: "The question whether or not a lottery should be established is not a fiscal question; its decision turns upon the moral sense of the community respecting this species of gambling."

There are, however, some pertinent economic considerations involved in the lottery question. First, lotteries are supported largely by the poorer strata of society, so that they tend to be a regressive form of taxation; second, while the lottery is going on, large sums of money are withdrawn from circulation. The social and moral considerations involved are usually considered weighty. Lotteries give rise to a very pernicious form of gambling, particularly among those who can ill afford to indulge in such a pastime. After the drawing for a grand lottery in London under the old system, there were 50 cases of suicide among persons who were disappointed in the lottery.

In a report on lotteries published in 1883 by the United States Department of Justice, Joseph Watson, one time mayor of Philadelphia, is quoted as saying:

"I do not think it necessary to go into a detail of a number of cases that occur to my remembrance of the awful effects produced on individuals and families by the infatuation of lottery gambling. I have known individuals of former good repute and standing in society who, in bitter agony of feeling, have declared to me that they were guilty of breach of trust, larceny and other crimes, induced solely by gambling in lotteries, and vested all their property, and that of others intrusted to them, in tickets."

The comment of Alexander D. Noyes, financial writer for the *New York Times*, typifies what many serious people are thinking of the lottery proposal:

"Last week's deliberations by New York's city fathers concerning tax expedients were a passing incident. They give a rather melancholy picture of the period's official mentality. The 'lottery plan,' equally stupid in conception and in form, may be said to have made the picture perfect. Why, if determined on reviving a discreditable past, the Municipal Assembly should not have discussed a tax on windows, doors, furniture, or a New York City 'octroi,' it is difficult to say."

Tastes and Odors in Water Supply Caused by Electric Currents

The Effects of Stray Currents, Grounds and Electrical Thawing of Services

By M. WARREN COWLES

Health Officer, Hackensack Water Company, New Milford, N. J.

COMPLAINTS of an unsatisfactory tap water, involving peculiar metallic or astringent tastes, odors and discoloration or suspended matter, have been received during several years past at the Central Service Bureau of the Hackensack Water Co. On investigation, the complaints seemed to be confined to a particular building, and the quality of the water delivered from a tap apparently varied from day to day, all of which did not indicate a general condition of the water in the mains. There was also occasional evidence of deterioration of brass pipe in certain parts of the water system of the building, and yet the pipe was relatively unaffected in other parts. No explanation from the usual investigational procedure seemed adequate, the usual corrective measures failed, and gradually observations pointed to the theory that electric currents might be causing the trouble.

Preliminary field investigations with suitable electrical instruments indicated the presence of electric current either alternating or direct, wherever these conditions were reported. Some 55 of the 75 complaints now on file in the Central Service Bureau, which apparently involve electric currents, have been further investigated by obtaining current readings with a specially designed d-c—a-c test set for a few minutes during the day hours. At 18 of these 55 locations, recording instruments have been connected and records obtained over periods of 24 hours or more.

The electrical readings showing the currents flowing between ground wires from electric distribution systems and house water services varied widely. The charts produced by the recorder in several of these instruments used in Dumont and Englewood, N. J., were studied carefully. The magnitude of the alternating current between the neutral ground wire and water service was most surprising in view of the frequently heard statement that there is no current flow in the neutral, as the transformer circuit is balanced. It is still more interesting when one considers that the path of the current along the water service is in parallel with the copper-wire path and perhaps other paths, and therefore the current entering the water service may be only a minor fraction of the total current flow, or a major portion, depending on the relative resistances of the several paths. The study also showed an appreciable interchange of direct current between the water service and the overhead electric system. Such current interchange over ground wires is certainly objectionable, and a great many water services may carry appreciable amounts of current.

Removal of Currents Improved Water

Experimental removal of electric currents from water services under field conditions where it has been done completely on a temporary basis, has effected a considerable improvement in the character of the water delivered, indicated by the disappearance of odor, and a lessening of the discoloration or the amount of suspended material, followed by a gradual decrease in the amount of taste in the water. In one or two cases of business buildings, improvement in the quality has not been as marked, owing to difficulty in removing currents from all portions of the water service lines. The length of time for recovery may be found to bear some relation to the amount of the current formerly flowing through the service. The field data indicate the presence of currents on water services suspected by reason of inferior quality of water, and the data thus far show an improvement of quality when the currents are removed.

Laboratory Experimental Work

In the laboratory, experiments under way for nearly a year, using new water service pipes of galvanized iron, brass, copper and lead, with electrical and other conditions readily controllable, thus far indicate certain trends. Pipes carrying only about one ampere of current deliver a water containing odor and taste, while the water from pipes not carrying current is relatively unaffected. Alternating current produced an effect not greatly different from direct current. An intermittent current apparently produces effects in general somewhat greater than does a constant current of some average magnitude. The removal of current is followed by a sharp reduction in the odor and a gradual reduction in the taste, which parallels the observations made in the field. There seems to be no marked difference between the water delivered from the pipes of the several materials, but further study of the analytical work may indicate otherwise. The concentration of metals in the water from the pipes without current shows a fair agreement with the tastes produced. The concentration of metallic salts in water from the current-carrying pipes is somewhat greater, but is not sufficient to account for the taste produced in the water. The theory as to the cause of the deterioration of the quality of the water, and any consequent effect on corrosion of the pipe material, is still undetermined.

Similar observations have been made by the writer and others on other public water supplies treated and untreated from surface as well as underground sources, and the condition seems to be one of general occurrence for all

water supplies to a greater or lesser extent and not peculiar to the filtered surface supply of the Hackensack Water Co.

Effect of Electrical Thawing Devices

The use of electrical devices, either motor-generator sets or transformers for thawing frozen services, during the extremely low temperature of the past winter has produced some observations of decided interest in this connection. Our experience with the heavy currents used to thaw a service (300-400 amperes) indicates the production of a taste in the water noticeable over a period of several days and finally disappearing, and an increase in the amount of odor contained in the water. In many instances where the main is a part of the electrical thawing circuit, the production of very disagreeable odors of unusual intensity, followed by complaints from other consumers in the immediate vicinity, have resulted. In one case, actual electrolysis of the water occurred as evidenced by the reduction of chlorides. There is also ample evidence that the heavy thawing current may damage services and the joints in cast iron mains. It appears from contacts made by our organization that there is a surprising unanimity of opinion among water-works people that these large currents do have a detrimental effect on the water as well as on the pipe structure.

Summary

The observations made in the field and laboratory investigation thus far tend to further confirm the theory advanced that stray alternating and direct currents on water service pipes do apparently have deleterious effect on the water delivered through such pipes. Many water services and water piping systems carry currents, and the magnitude of the currents is very surprising.

Further laboratory research of highly involved chemical and electrochemical type seems to be necessary to explain the apparent action of the electric current by producing a deterioration in the quality of the tap water, and perhaps an abnormal stimulation causing rapid corrosion of the piping system.

It is necessary to secure the cooperation of all organizations concerned, including not only the water-works industry and the electric power distribution industry but many others as well, not omitting the owners of buildings which are consumers of water and power, for only by such means can the problem of the control of stray currents in our modern communities be established.

ACKNOWLEDGMENT.—From a discussion of the paper, "Electrical Grounds on Water Pipes," presented by H. S. WARREN before the New England Water Works Association.

The Mechanical Cleaning of Streets

Miami, Fla., Shows Unit Costs for Fiscal Year

MIAMI had a population of 110,637 according to the 1930 Census. During the months from December through March this population is almost doubled. The area of the city is 46 square miles, of which 30 are land and 16 water. The topography is level and sandy, and the paving is mostly concrete and asphalt.

Two pick-up street sweepers and nine white wings, with a utility truck to haul away the sweepings accumulated by the sweepers, comprise the entire street-cleaning force. This small group of machines and employees constantly combat the carelessness of hordes of visitors in the disposition of papers and other minor waste objects. The streets are generally in a very presentable condition in keeping with the character of the city as a leading Florida East Coast resort.

Operation of the Sweepers

The two Elgin pick-up sweepers swept a total of 16,819 miles of pavement during the fiscal year ending June 30, 1934, and they operated 274 and 442 days respectively, the latter running two shifts. They accumulated 1,046 and 1,855 hopperfuls or loads respectively during this period. The cost of pay for the drivers was $1,562.05 and $2,341.80, with no charges for labor. The maintenance for the two machines was $867.10 for the day machine and $1,325.54 for the two-shift machine. Supplies, including gasoline, oil, lubricants, repairs, new broom fiber, and extra parts, cost $1,439.63 and $1,947.73 and supervision and division overhead were $128.37 and $341.13 respectively for the day machine and $207.27 and $350.29 respectively for the night or two-shift machine. This made total costs of $4,338.28 and $6,372.63 for the operation of the two machines, which, summarized and applied to the mileage covered, shows costs of 71 cents per mile cleaned for the day machine and 60 cents per mile cleaned for the two-shift machine.

The Sweeper Dump Pick-up Truck

The Mack dump truck which hauled away the loads of sweepings accumulated by the pick-up sweepers worked 300 days and hauled away 1,762 loads, or 8,400 cubic yards, of street sweepings. The driver's pay was $1,231.16 and the labor pay $789.26 for this service. The cost of maintenance of the truck was $875.14, with no supplies charged to it during the whole year. The supervision charge was $140.70 and the division overhead $373.50, making the total cost for the year $3,409.76, or 41 cents per cubic yard of material handled.

The White Wings Supervisor's Coupé

A Chevrolet coupé was used by the supervisor of the white wings, who traveled a total of 17,098 miles in this service in 365 days of actual service, or 2,780½ man-days of white wing labor. The coupé driver received $918.00 pay, and the labor pay was $5,561.80. The maintenance of the coupé was $242.05 for the year, and supervision charged against it was $140.70. The division overhead charge was $373.50, making a total charge of $7,376.87 for the year, or 53 cents per mile swept.

Commercial Aspect of Michigan's Municipally Owned Utilities

Condition of Plant—Meter Testing—Wiring Standards—The Sale of Appliances

By DONALD M. WHITESELL*

VISITS to each of the municipal electric properties in Michigan reveal a variety of conditions existing in connection with physical plant equipment. In some communities the tendency is to develop a particular branch of the utility, and to slight another: the generating plant may be in good condition, the distribution lines neglected.

Hydro-electric generating stations are the easiest to maintain, but in spite of this, cases of poor housekeeping are evident among this type. No better example of a well-kept plant of this kind is available than the Portland station. While this is a new building, having been completed in 1931, an effort is being made to *keep* it in a new condition. Marshall also has a clean and orderly hydro plant, comparing very closely with that of Portland.

Steam-turbine and steam-engine stations require more work to keep them orderly and clean than any other type, yet numerous steam-turbine plants are kept in excellent condition. The Moore's Park station in Lansing and Detroit's Mistersky station are good examples among the larger plants. Coldwater, utilizing an old building, has a regular schedule of progressive maintenance in which the entire generating station receives attention once every three years.

The only steam-engine station that presents a clean, well-maintained appearance is Charlevoix. The others are in old buildings crowded with generating and boiler equipment. The criticism that can be applied to this type of station in general is lack of safety guards around moving mechanical parts and belts traveling at high speeds.

Among the diesel-engine plants a wide variety of conditions exists. While Lowell's station is a stand-by unit, it could serve as a model for other plants in its cleanliness and order. Grand Haven's diesel-engine building is another example of constant attention to cleanliness and order, and the plants at Hart and Charlevoix indicate proper maintenance.

The fact that a station building and its equipment are old is not a legitimate excuse for neglecting their upkeep. There exist examples of all types of older plants that are well kept. These include the hydro-electric installations of Traverse City, Three Rivers and Sturgis; the combined diesel-engine and steam-turbine station of Dowagiac; the St. Louis plant with hydro diesel and steam-turbine equipment; and the oil engine station at Sebewaing. In contrast to these, some of the much newer stations did not exhibit particular attention to upkeep, with excessive amounts of lubricating oil on machinery and floors, tools and miscellaneous material stored behind switchboards and in corners, and the evident need of a general housecleaning and a thorough application of paint.

In all communities except two, meters are the property of the utility. White Cloud and Harrison are the exceptions, and in these towns each customer buys his own meter.

Meter testing receives almost universal attention and is recognized as necessary by all plants, but only 15 plants conduct periodic tests, and in most cases the periods vary from two to five years.

Many municipal utilities that realize the necessity of tests do not consider it worth while to maintain a record of these tests. From among the 40 plants that conduct meter investigations, the following facts are available:

a. Nineteen plants keep card records.
b. One plant, a book record.
c. Fourteen plants, no record.
d. Six plants, in question.

Only five plants have recognized the necessity of print-

PLANT DATA CORRELATED WITH NUMBER OF METERS

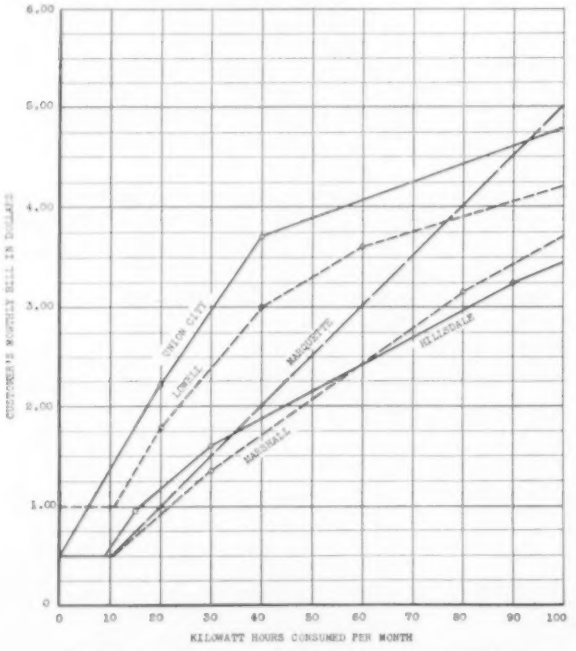
Municipality	Total Meters in Service	Population Served per Meter	Total Plant Capacity Kw/Meter	Net Energy Produced Kwh/Meter	Present Dep. Value of Fixed Assets per Meter $	Operating Revenue per Meter $
GROUP A						
Lansing—G	27,013B	3.5	2.46	2600	284	63.40
Bay City—P	9,187	3.3	0.53	1250	59	31.20
Wyandotte—GP	6,794	4.2	0.85	1610	166	56.10
Marquette—GP	6,234	2.6	1.28	2440	272C	39.70
Escanaba—P	3,902	3.7	0.41	1030	87C	46.20
Holland—G	5,221	3.4	2.94	1610	163	49.50
Traverse City—G	2,251	3.8	0.90	1580	232	46.00
Niles—GP	3,200	3.6	0.61	1240	157	50.80
Grand Haven—G	3,100	3.0	1.48	1540	218	57.50
Sturgis—GP	2,000A	3.6	0.92	....	171	56.10
Coldwater—G	2,437	2.8	1.44	1500	139	42.40
Negaunee—P	1,656	4.0	0.24D	740	...	34.20
Hillsdale—G	2,425	3.0	1.31	2120	279	41.50
Petoskey—GP	1,600	3.7	0.62	1640	148	59.50
Gladstone—P	1,596	3.4	0.30	710	42C	31.10
Marshall—GP	1,909	2.7	0.87	1190	131	38.60
South Haven—GP	2,562	2.7	0.85	1280	93	43.10
Norway—P	1,600A	3.7	0.37	710	...	26.90
Wakefield—P	784	4.7	0.46	1490	159C	49.90
Crystal Falls—GP	1,116	3.5	....	1390	146	40.50
Eaton Rapids—P	1,075A	3.0	0.45	1070	...	38.90
St. Louis—G	754	3.3	1.37	1320	...	33.50
Newberry—P	570	4.4	....	1260	...	61.40
L'Anse—GP	720	3.4	0.33D	1370	...	44.00
Charlevoix—G	1,102	2.1	1.03	1310	...	36.20
Blissfield—G	(a)	...	...	....	...	.....
Chelsea—P	705	2.9	0.32	1110	24	40.80
Lowell—G	840	2.8	1.79	2350	348	58.60
Portland—G	700	2.9	0.74	1570	278C	41.60
Hart—G	873	2.0	0.83	1020	278	39.10
Paw Paw—GP	614	2.8	0.39	940	136C	41.40
Croswell—P	398	3.7	0.45	1320	55	63.40
Sebewaing—G	505	3.1	0.63	1070	139C	46.10
Harbor Springs—P	600A	2.5	0.80D	1450	81	63.90
Union City—G	488	2.6	1.19	1110	326	40.50
Baraga—P	190A	5.5	0.79D	....	...	.....
Bellevue—P	375	3.0	0.24	930	...	35.00
Clinton—G	400A	2.6	1.12	....	...	.....
Manton—G	200A	5.0	0.36E	....	...	.....
Detour—G	135	5.3	0.28	....	...	.....
White Cloud—G	275A	2.4	0.46	....	...	27.20
Bellaire—GP	261	2.1	0.38F	1060	...	28.00
Harrison—G	140	3.3	0.55	1150	...	.....
Stephenson—P	168	2.7	0.44	940	...	.....
Daggett—P	(a)	...	....	....	...	.....

(a) Records not available. A Approximate number given. B Average for year. C Computed using gross book value of fixed assets. Not depreciated. D Computed using transformer capacity only. E Computed using diesel-engine capacity only. F Computed using generating capacity only.

* Author of report just issued by Michigan Municipal League. See page 97, this issue.

ing a set of rules governing wiring standards and other customer regulations. The Holland plant has adopted a small, very neat form of loose-leaf pamphlet, which lends itself ideally to its purpose. The other utilities that print rules and standards are Union City, Coldwater, Hillsdale and Lansing. The remainder do not have printed or typewritten copies of customer rules and regulations.

A survey of the standards used by each municipally owned utility for inside wiring, service entrance requirements and like matters, indicates that most plants follow the generally accepted standards outlined by the National Board of Fire Underwriters in the National Electrical Code. Seven cases were found where no standard was required.



CURRENT COSTS AT FIVE TYPICAL UTILITIES

That an established wiring code should be rigidly enforced by every municipal plant is evident, in that they, as well as privately owned utilities, are confronted with the problem arising from the theft of current by tampering with unprotected meters, tapping the service entrance ahead of the meter, and numerous other nefarious practices. Unfortunately, some municipal plants are powerless to cope with the situation. This may be attributed to the attitude of the plant-governing body in that they do not appear to realize how serious such a condition may become, nor will they, in certain instances, support their superintendents in the apprehension and punishment of offenders.

Numerous arguments are used in each community, in favor of or against municipal plants attempting to sell electrical merchandise as a part of their business. The different policies and practices can be classified under four headings:

1. Plants doing a complete merchandising business. Certain of these attempt to stock and display appliances and equipment, while others carry no stock, orders being placed with the manufacturer or jobber only as merchandise is required by a customer.

2. Plants that do not regularly sell equipment or appliances but will order them as an accommodation to customers.

3. Plants that attempt only a limited sale of merchandise.

4. Plants that do no merchandising.

While most superintendents are aware of the load-building possibilities in the increased use of electrical equipment and appliances, various reasons were given for the different policies they followed. Certain plants sell all kinds of equipment, sometimes in spite of the objections of local merchants. The arguments advanced in favor of this practice are that, first, merchants are interested only in the profit to be made on sales and not in the load possibilities of the municipal utility; second, merchants assume a passive sales attitude and do not exert the effort that plant organizations make in promoting sales activity; and, third, customers benefit by the lower prices resulting from municipal selling because profit on sales is not the primary purpose of such action, and thus the profit margin is negligible.

One particular case needs to be mentioned. This plant sells electric ranges and other electrical merchandise to its customers at the manufacturer's selling price to the utility, while freight and handling costs, as well as installation expense, are free to the purchaser, they being borne by the plant. This proposition may appear attractive to the individual who purchases merchandise, but one should not lose sight of the fact that each consumer of electric energy is helping to pay for this so-called "free service" to some other customer, the cost being reflected in his rates for electric energy consumption.

Michigan's Home-Owned Utilities

THERE are 52 plants in Michigan, dating from 1889 to 1927 and serving populations ranging from 291 to 94,300. Councils control twenty plants in towns of 5,000 or less; council-managers control one plant in a town under 5,000 and four plants in larger cities. Usually a special committee of the council supervises operation. In considering the influence of financial policy on rates, it is pointed out that two of the utilities could materially reduce rates if they were not helping to support their city governments. An exception is the town of Holland, where rates are lowest, although during the last two years it has contributed in taxes and actual grants the largest annual amounts of any of the municipalities. Nine plants do not meter street lighting, and payment is as follows: 21 cities pay cash, 19 make book transfers, 11 pay nothing. In 40 of the 52 cities water is pumped by electric drive, and payment is as follows: cash by 16 cities, book transfers by 10, and 11 pay nothing.

Generating equipment totals 201,348 kw, of which 177,510, or 88 per cent, is steam-turbine, 2,109, or 1 per cent, is steam-engine, 14,130 is hydro, and 7,599 is diesel. Substation transformer capacity is 31,880 kw. There are turbines in 14 plants, 81 per cent being concentrated in the Detroit and Lansing stations. Detroit has four 20,000-kw units. The 65,500 kw at Lansing comprise one 15,000-kw, two 20,000, one 5,000, two with combined capacity of 3,500, one 2,000-kw, located in three stations. Marquette has the largest installation of hydro-electric generating equipment: two 1,600-kw machines, under head of 134 feet. There are 20 diesel installations, of which only five run continuously to furnish a regular source of energy. The largest has a capacity of 1,600-kw in two equal-sized units. Only two installations, at Blissfield and Clinton, totaling 975 kw and non-condensing, rely on steam engines. Sixteen utilities purchase all energy: seven used to generate, but dismantled. (See review on page 97.)

Municipal Water-Works Construction

Direct Purchases vs. Purchases Through Contractors

DIRECT purchase by municipalities of materials, machinery and equipment for construction contracts is a subject that has been discussed on many occasions. Engineers and city officials generally are desirous of keeping the cost of construction work as low as possible and, to effect savings, are advocating the purchase direct from manufacturers or dealers, rather than through contractors, of the major materials, including machinery and equipment. While this may tend to increase the number of contracts, it is generally conceded that substantial savings can be made and better service secured by purchasing direct from the source of supply.

This procedure has long been followed by private buyers, who invariably seek competitive bids on uniform specifications and then buy their requirements from manufacturers or dealers in materials, machinery and equipment. The installation in such cases is contracted for separately.

Many leading engineers advocate the same practice for municipal construction under rigid inspection and competitive bidding. Manufacturers and dealers are generally in favor of the plan.

Major construction projects frequently involve expenditures for materials and supplies from 25 to 40 per cent of the completed cost, and the saving that can be effected by contracting direct for these supplies, rather than to include them with the labor and expense of construction, is in the interest of economy.

There are numerous instances where municipal officials have made contracts in good faith with contractors to furnished all needed materials, equipment, machinery and supplies and do the construction work, to find that later the contractor, because of unforeseen conditions, faulty judgment or financial troubles, is embarrassed and cannot pay his bills—thus causing the municipality much trouble and frequently an added cost for legal services and other unlooked for expense. In many such cases the construction projects have cost the bid price and added legal expense, etc., and yet those furnishing materials, equipment and machinery have failed to secure full payment of their accounts—thus suffering losses that are unwarranted. To cure this situation, engineers, public officials and legal advisors are more than ready at any time to remedy that evil.

The economy in direct purchases, and the advantage of selecting the lowest and best bids backed by the responsibility of the manufacturer and jobber, are but two of the reasons why engineers and municipal officials are more and more buying machinery and materials direct, and contracting for the erection and construction.

The National Championship Soap-Box Derby

SIXTY THOUSAND SPECTATORS LINED BOTH SIDES OF BURKHARDT HILL, DAYTON, OHIO, TO WATCH THE FINAL EVENTS OF THE CHEVROLET-SPONSORED ALL-AMERICAN SOAP BOX DERBY, IN WHICH THE WINNERS FROM 34 CITIES COMPETED FOR THE NATIONAL CHAMPIONSHIP, WHICH CARRIED WITH IT A FOUR-YEAR COLLEGE COURSE AND A GOLD WRIST-WATCH AS PRINCIPAL PRIZES

Unemployment Relief—Its Cost and How the Burden Is Shared

EMPHASIZING that the Federal Emergency Relief Administration was established to supplement and not to supplant state and local responsibility for the care of the needy unemployed, Corrington Gill, Assistant Federal Emergency Relief Administrator, discussed on September 18 the financial problems of FERA before a meeting of the Municipal Finance Officers' Association in Philadelphia.

Mr. Gill, who directs the disbursement of Federal funds granted to the states by FERA, of which Harry L. Hopkins is Administrator, placed the cost of unemployment relief to the taxpayer from January, 1933, through June, 1934, at $1,340,000,000. State and local bond issues, he pointed out, for the same period approximated $300,000,000. He also touched upon other sources of revenue which states and municipalities had tapped to meet their share of the unemployment relief bill.

Almost two-thirds of the total relief expenditures, or 62.8 per cent, was provided by the Federal Government, 16 per cent by the state governments, and 21.2 per cent by smaller political subdivisions. Local contributions, Mr. Gill pointed out, have declined in every quarter since January, 1933. In the first quarter of 1933, he said, localities met 33 per cent of the relief bill, while in the second quarter of 1934, it is estimated, local contributions dropped to 14 per cent. The decrease in local funds for unemployment relief, Mr. Gill added, is due to a dominishing financial capacity of local governments.

In contrast, contributions by state governments increased steadily from 9 per cent in the first quarter of 1933 to 33 per cent in the corresponding quarter for 1934. This progress was interrupted, however, during the second quarter of this year, when contributions declined to 12 per cent.

In some states, Mr. Gill told the finance officers, the separation of state from local funds is merely an accounting procedure. In California, for example, funds for relief were provided through a state bond issue of $20,000,000. The proceeds of the bond issue were reloaned to the counties and are to be repaid by them out of their share of the gasoline tax. While listed as a state contribution, this may in many respects be properly considered a local contribution.

The Congress passed the first relief act in July, 1932, Mr. Gill said in recounting the history of Federal relief appropriations. The sum of $300,000,000 to be made available by the Reconstruction Finance Corporation to the various states and municipalities was appropriated. This policy of making funds available was changed in May, 1933, when the Federal Emergency Relief Administration was established by act of Congress and $500,000,000 made available for use as grants to the various states.

An additional $575,000,000 was given to the FERA under act of Congress, and in the emergency appropriation act of June, 1934, the President has allocated to the FERA so far $100,000,000 for direct relief for unemployment relief and an additional $217,340,000 for carrying on relief activities in stricken agricultural areas. In all, $1,392,340,000 has been appropriated to the FERA, Mr. Gill said, of which $1,100,000,000 has been granted to the middle of August.

"We anticipate that the balance will be exhausted by the end of this month," said Mr. Gill, "and it will then become necessary for the President to transfer to the Federal Emergency Relief Administration additional funds under the emergency appropriation act of the last Congress."

FERA Not Responsible for the Sales Tax Movement

Since 1931, 36 states have provided unemployment relief funds, mostly in the form of special legislation. Statements to the effect that demands of the FERA had caused an enormous increase in public debt; that it is consuming the bulk of the liquor revenue; that it is responsible for the diversions of large proportions of the automobile revenues; and that it is responsible for the sales tax movement, were declared to be "grossly inaccurate" by Mr. Gill.

"Let me state definitely," he said, "that the Federal Emergency Relief Administration has never endorsed one method of raising relief funds as against another. What I am particularly anxious to avoid is the impression that the Federal Emergency Relief Administration is bringing pressure to bear upon states to adopt certain specific revenue measures, for example, the sales tax. We tell a state the amount we expect it to contribute and that the state can choose any method it desires."

Mr. Gill pointed out that the sales tax is now employed in 17 states, but it is difficult to determine exactly what proportion of funds raised in this manner go into relief channels. It is apparent, he added, that not more than $20,000,000 of such funds will be used for relief purposes.

Wide Variation in Federal Grants

There is a wide variation in Federal grants to states and state aid to municipalities, Mr. Gill said. He placed the Federal contributions in 18 months to Massachusetts at 29.9 per cent, while in South Carolina and Mississippi they were 99 per cent. Massachusetts contributed 72 per cent to municipalities, while South Carolina and Mississippi, in addition to eight other states, contributed nothing to municipalities.

There is no fixed formula through which the FERA can determine how much money a state or municipality can contribute for relief, Mr. Gill said, however desirable such a formula would be. The factors which enter into the decisions as to the amount of grants made to states are many, but the controlling factor is the absolute need of the unemployed.

"The Federal Emergency Relief Administration has consistently followed the policy," he concluded, "of exerting all the legitimate pressure which it could properly bring to bear without causing undue suffering to the unemployed themselves who are not responsible for the attitude of those determining the fiscal policies of states or localities."

A Study of Methods of Building Low-Cost Bituminous Roads—II

Surface Courses, Surface Treatments, Dust Treatments, Soil Treatment

By **J. T. PAULS**
Senior Highway Engineer, U. S. Bureau of Public Roads

Bituminous Dust Treatments

Other types of treatments of less permanent character which are of considerable importance are the bituminous dust treatments and the various types of soil treatments. Slow-curing liquid asphaltic materials of low viscosity are required for the dust treatment. The treatment usually consists of a light application of the bituminous material followed by dragging or light blading. It is well to remove excess dust before applying the first treatment, since excess dust will produce a rubbery type of surface which tends to rut and shove. Two or more treatments are generally required during the first year, after which they may be required less frequently. In cases where the base soil or aggregate is of satisfactory character the progressive treatment plan is often employed to develop a satisfactory and fairly permanent wearing surface.

Bituminous Soil Treatments

Treatment of the natural soil roads with bituminous material has been practiced with some success in Missouri and Illinois. The method of treatment is essentially as follows.

The earth surface is shaped and consolidated and is fairly dry but free from dust when treated. Bituminous material of the slow- or medium-curing type and of low viscosity is applied at the rate of 0.4- to 0.75-gallon per square yard in from one to three applications, sufficient time being allowed between applications for the oil to be thoroughly absorbed.

Light blading is sometimes employed to aid in combining the bituminous material with the soil.

Tests of Liquid Asphaltic Materials

In view of the extensive use of liquid asphaltic materials in the construction of low-cost surfaces, tests and specifications for the control of such materials are of particular interest and importance. In the early development of the low-cost work a great multiplicity of tests were employed. This resulted in a wide variation in the requirements for similar materials and not only placed an unnecessary hardship on the producers but made intelligent comparison of otherwise similar work in various states extremely difficult.

During the past three years the state highway departments, The Asphalt Institute, the producers, and the Bureau of Public Roads have cooperated in an attempt to simplify and standardize the tests and specifications for the liquid asphaltic materials. As a result of this work the following tests were recommended for use:

1. Flash point
2. Saybolt Furol viscosity
3. Distillation up to 680° F. with cuts at 374, 437, 600 and 680° F.
4. Tests on the residue from distillation:
   a. Float at 122° F., or
   b. Penetration at 77° F., 100 grams, 5 seconds
   c. Ductility at 77° F.
   d. Solubility in carbon disulphide

Based on a study of the various state specifications and the materials submitted by the different producers to meet these specifications, test limits were suggested for 13 distinct grades and types of liquid asphaltic materials. These 13 materials were grouped according to their viscosities, their distillation losses and the consistency of their distillation residues, into three classes, namely, slow-, medi-

PROPOSED SPECIFICATION REQUIREMENTS FOR LIQUID ASPHALTIC ROAD MATERIALS

Test Requirements	Material Type												
	SC-1	SC-2	SC-3	SC-4	MC-1	MC-2	MC-3	MC-4	MC-5	RC-1	RC-2	RC-3	RC-4
Water and sediment, per cent	2.0—	2.0—	2.0—	2.0—	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flash point, °F.	150+	200+	200+	250+	.....	150+	150+	150+	150+	80+	80+	80+	80+
Viscosity, Saybolt Furol at 77°F., sec	20–150	.....	.....	.....	40–150	.....	.....	.....	.....	.....	.....	.....	.....
" " " " 122°F., "	.....	200–320	.....	.....	.....	.....	.....	.....	.....	80–160	200–400	.....	.....
" " " " 140°F., "	.....	.....	150–300	350–550	.....	150–250	300–500	500–800	.....	.....	.....	275–400	700–1400
" " " " 180°F., "	.....	.....	.....	.....	.....	.....	.....	.....	170–280	.....	.....	.....	.....
Total distillate to 374°F., per cent by volume	.....	.....	.....	.....	.....	.....	.....	.....	.....	5+	.....	.....	.....
" " " 437°F., " " "	.....	2—	2—	2—	10—	2—	2—	1—	1—	12+	10+	3+	0.5+
" " " 600°F., " " "	.....	15—	10—	8—	25+	10–20	8–20	16—	14—	25+	20+	14+	7+
" " " 680°F., " " "	50—	25—	20—	18—	50—	27—	25—	25—	20—	40—	35—	30—	25—
Float of residue, 122°F., sec	50—	25+	25+	25+	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penetration of residue, 100 g., 5 sec., 77°F.	.....	.....	.....	.....	70–300	100–300	100–300	100–300	100–300	60–120	60–120	60–120	60–120
Ductility of residue, 77°F., cms.	.....	.....	.....	.....	60+	60+	60+	60+	60+	60+	60+	60+	60+
Solubility of residue in CS_2, per cent	99.0+	99.0+	99.0+	99.0+	99.5+	99.5+	99.5+	99.5+	99.5+	99.5+	99.5+	99.5+	99.5+
Recommended Uses													
Dust layer	X	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Primer	.....	.....	.....	.....	X	.....	.....	.....	.....	.....	.....	.....	.....
Surface treatments	.....	.....	.....	.....	.....	.....	.....	.....	.....	X	.....	.....	.....
Mixed-in-place construction													
Aggregate densely graded[1]	.....	X	X[5]	.....	.....	X	.....	.....	.....	.....	.....	.....	.....
Aggregate, open graded[2]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	X	X[5]	.....
Coarse aggregate[4]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	X	.....
Plant-mixed construction													
Aggregate, densely graded[1]	.....	.....	X	X	.....	.....	X	.....	.....	.....	.....	.....	.....
Aggregate, open graded[2]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	X	X	.....
Aggregate, open graded[3]	.....	.....	.....	.....	.....	.....	.....	X	X	.....	.....	.....	.....
Coarse aggregate[4]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	X	X

[1] Max. size not over 1 inch. Fairly uniform grading from coarse to fine with appreciable percentage passing No. 200 sieve. [2] Max. size not over 1½ inch. Fairly uniform grading from coarse to fine with little or no material passing No. 200 sieve. [3] Max. size not over 1 inch. Fairly uniform grading from coarse to fine with little or no material passing No. 200 sieve. [4] Max. size not over 1½ inch. Little or no material passing ¼-inch screen. [5] Under favorable conditions only.

um- and rapid-curing. The tabulation on the preceding page gives the tests and test limits which were suggested for these 13 materials and the uses for which they are considered suitable.

Although not all the states have adopted the proposed tests and specifications in whole, the tests and specifications applying to cutback asphalts have been widely accepted, and with some modifications those applying to road oils are used to a considerable extent. There is some difference of opinion as to the adequacy of the proposed tests to distinguish between suitable and unsuitable slow-curing materials or road oils, particularly as to their weathering properties. Field behavior seems to show quite definitely that road oils which are produced by certain processes of manufacture and, possibly, influenced to some extent by the source of supply, have unsatisfactory weather-resistant properties which make them unsuitable for certain types of construction.

An effort on the part of the consumers to eliminate such materials is largely responsible for such lack of uniformity in tests and specifications as now exist. This lack of uniformity in tests now in use or proposed for use indicates a wide difference of opinion among the states as to the type of test which will best show up this fault of the material.

Several agencies, including The Asphalt Institute, some of the states, and the Bureau of Public Roads, are carrying on research to develop some method of definitely evaluating the weathering properties of this class of materials.

ACKNOWLEDGMENT.—From a paper presented at the University of Michigan Highway Conference.

What Constitutes a Low Bid on an Incinerator?

By **GEORGE L. WATSON, C. E., D. Eng.**
Consulting Engineer, New York City

IT is a fact well known to the engineering profession that where mechanical equipment is in service over a period of fifteen or twenty years the first cost is insignificant compared with the cost of efficient operation of the machine. Twenty years is 175,000 hours—a large number by which to multiply any difference in the hourly cost of operation.

No person of intelligence would think of buying a steam boiler unless he knew how much it was going to cost to produce its rated horsepower. A few thousand dollars' difference in first cost is insignificant compared to the cost of an additional pound of coal per hour when multiplied by 175,000, the average number of hours in the life of the boiler. Where electrical energy is used in the operation of the plant, this cost is also a long-time factor and is given due weight in selecting the most economical equipment.

The specifications for certain types of equipment recognize this long-time factor, while others, for no known reason, neglect it, resulting in appalling waste.

The Port of New York Authority acknowledges its importance in the award of contracts for ventilating fans and similar equipment where economy of operation plays an important part. The award is based on an equation in which first cost and economy of operation over a long period are both represented.

In the purchase of incinerators by municipalities the long-time factor of the cost of operation and maintenance is almost entirely lost sight of, yet in no other type of equipment does it play so important a part. The nature of the material to be burned, as well as the carelessness in operation in many municipally owned incinerator plants, results in rapid deterioration. The refuse to be burned varies greatly, from wet garbage to dry refuse, unless it rains, and then the whole mass is soggy with moisture. This wet mass is charged directly against firebrick heated up to 2000° F. The result is spalling and rapid deterioration of the chamber walls.

A One-Year Guarantee Means Nothing

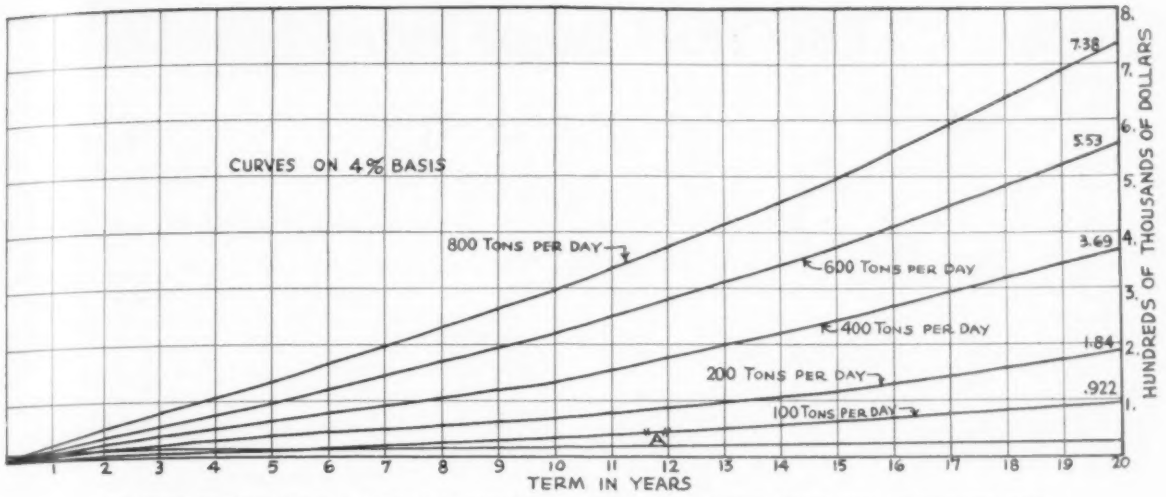
Incinerator specifications sometimes require a year's guarantee on maintenance, but there are few incinerators that will not pull through the first year without major repairs. A five-year guarantee is a different matter, and many a furnace, if not properly designed, has to be relined or rebuilt at even shorter intervals.

The modern incinerator is designed for 24-hour operation. The delivery of refuse takes place in 8 hours, and storage bins are provided as well as grab-buckets and cranes to charge the furnaces during non-collection periods. Electric power is used to operate the cranes, as well as the forced-draft fans, compressors for operating charging mechanisms, lighting, etc. Electric power costs money—enough waste heat is produced in the incinerators to generate more electric power than could be used in ten plants. Yet there are not a dozen incinerator plants in the country that generate electric current for their own use. If the cost of power to operate an incinerator over a long-time period was made a factor in the award of the contract, this waste heat would soon be utilized for electric power production.

The accompanying curve clearly indicates how insignificant a part first cost plays in the ultimate cost of an incinerator to a municipality. A difference of $10,000 in first cost amounts to approximately $22,000 in 20 years, compounded at 4 per cent, and the difference in cost of operation of 10 cents a ton in an 800-ton plant compounded on the same basis will amount to approximately $738,000, which is more than its original cost.

Initial Cost Low Bids May Be Misleading

Certain guarantees are required in specifications for incinerators, such as smoke nuisance, man-hours per ton, electric power required per ton, tons of refuse consumed per hour, etc. These guarantees must be met in the final test run before the plant is accepted, but the award of contract is usually made on the first cost of the plant. The low bidder may have guaranteed a cost of operation twice



GRAPHIC PRESENTATION OF THE FINANCIAL ADVANTAGE OF PAYING MORE FOR AN INCINERATOR THAT WILL INSURE SAVINGS IN COST OF OPERATION AND MAINTENANCE OVER A PERIOD OF YEARS

$10,000 difference in first cost, if banked at 4 per cent, interest compounded annually, will result in amounts as follows (see curve marked "A"):

1st year	$10,400.00
5th "	12,166.53
10th "	14,802.44
15th "	18,009.43
20th "	21,911.23
25th "	26,658.36

Same as above except 3¾ per cent

1st year	$10,375.00
5th "	12,020.80
10th "	14,450.00
15th "	17,370.00
20th "	20,880.00
25th "	25,099.00

Savings resulting over a period of years on account of 10 cents per ton lesser cost of operation, banked at 4 per cent, interest compounded annually; working 310 days a year:

	Basis 600 Tons per Day	Basis 800 Tons per Day
1 year	$ 18,600.00	$ 24,800.00
5 years	100,743.55	134,324.74
10 "	223,313.65	297,751.53
15 "	372,438.77	496,585.03
20 "	553,872.29	738,496.38
25 "	774,613.93	1,032,818.57
Same as above except at 3¾ per cent interest		
1 year	$ 18,600.00	$ 24,800.00
5 years	100,182.02	133,576.02
10 "	220,719.88	294,293.17
15 "	365,551.94	487,402.58
20 "	539,647.94	719,530.58
25 "	748,910.40	998,547.20

as high as the next man's, but he gets the job even though the municipality might save the cost of a new equipment every five or ten years by awarding it to a higher bidder.

The cost of the equipment of an incinerator usually equals about one-half the total cost of the plant. A difference of 10 cents a ton in ten years' operating cost of any plant, compounded at 4 per cent, will amount approximately to the original cost of the equipment. It therefore follows that effecting a saving of 10 cents a ton in operation will furnish sufficient money to renew the equipment every ten years. As the building does not deteriorate, this is equivalent to a new incinerator every decade.

Radio Series on "Trends in Government"

ANOTHER series of "You and Your Government" broadcasts is announced as begun October 2, to continue until January 29. The general theme of this ninth series will be "Trends in Government." These programs may be heard from 7:15 to 7:30 Eastern Standard Time every Tuesday evening over a nationwide network of the National Broadcasting Company. The October and November schedule follows:

October 2—The Crisis in Local Government
Dr. Charles A. Beard, author and lecturer; former President, American Political Science Association

October 9—European Local Government
Prof. Charles E. Merriam, University of Chicago

October 16—Putting Cities on a Cash Basis
L. P. Mansfield, Supervisor, Bond Dept., Prudential Insurance Company of America

October 23—Local Government from the Ground Up
Prof. John M. Gaus, University of Wisconsin

October 30—American Municipal Leagues
Harold D. Smith, President, American Municipal Association

November 6—New Rights for Old
Prof. James T. Young, University of Pennsylvania

November 13—Regionalism and Local Government
Prof. Phillips Bradley, Amherst College

November 20—The 44 Legislators of 1935
Henry W. Toll, Director, and Hubert R. Gallagher, Research Assistant, American Legislators' Association

November 27—Forty Years of Progress
From the Annual Meeting of the National Municipal League in Pittsburgh

December 4—Community Foundations
Colonel Leonard P. Ayres, Vice-President, Cleveland Trust Company
Ralph Hayes, Director, New York Community Trust

December 11—Enforcing Tax Collections
Philip A. Benson, President, Dime Saving Bank of Brooklyn
Russell McInnes, Government Bond Dept., Lehman Bros., New York

December 18—Emerging Problems
Dr. Arnold Bennett Hall, Director, Institute for Government Research, Brookings Institution

December 25—Progress in Election Reforms
Prof. Joseph P. Harris, University of Washington

January 1—State Reorganization
Prof. Kirk H. Porter, University of Iowa

January 8—Protecting the Taxpayer
Edward A. Filene, President, Wm. Filene's Sons Company, Boston

January 15—Government Personnel
L. D. Coffman, President, University of Minnesota; Chairman, Commission of Inquiry on Public Service Personnel

January 22—Federal Help in Local Re-financing
William Hard, Publicist

January 29—Taxation for Prosperity
Col. Willard Chevalier, Vice-President, McGraw-Hill Publishing Company
Harold S. Buttenheim, Editor, THE AMERICAN CITY

The Trickling-Filter Fly

By GORDON M. FAIR

Associate Professor of Sanitary Engineering, Harvard Graduate School of Engineering

IN order to appreciate the factors underlying the successful control of Psychoda on trickling filters, it is essential to have some understanding of the life history and morphology of this fly. The female fly lays her eggs in the film covering the trickling-filter ballast. The eggs, single or in masses as great as 100, are almost transparent and hatch in less than two days at 70 degrees F. They can probably withstand submergence and winter conditions.

The larvae resemble mosquito wrigglers, are white in color and possess a distinct head with a well-developed biting mouth, eyes and feelers. The larva moults three to five times, the last moulting producing the pupa. By voracious feeding, it grows from 0.75 mm to over 9 mm and, being legless, it moves like a caterpillar. It pushes itself into heavy filter slime, usually permitting only its breathing tubes to protrude at the surface. In northern climates the insect is believed to hibernate chiefly in the larval stage and in the egg stage. At 70 degrees F. the larval stage occupies 9 to 15 days, and at 85 degrees F. only 8 days. Ordinarily the larva suffocates when totally submerged in water for 24 hours.

The pupa is yellowish in color and shorter and thicker than the larva. All organs of the perfect insect are fully developed but are held rigidly against the body. The pupa breathes through two horns attached to the thorax, which protrude through the filter slime in which the pupa rests. The pupa does not feed. At 70 degrees F. the adult fly emerges after 20 to 48 hours, and the pupal stage seldom occupies more than a few days.

After emergence, the perfect insect runs to a dry spot and the wings unfold. Males live only a few days, while females live to seven days at normal temperatures. The adult fly moves upward and towards the light after emergence, thus escaping from the filter. In trickling filters, the adult fly likes to rest on the dry under-surface of the top layers of stone or in sheltered places about the filter. The adult flies are sluggish and move chiefly by hopping, running and short flights. Wind, however, may carry the flies appreciable distances from the filters. Distances of 1,000 feet to almost a mile are mentioned in literature. The flies are so small as to pass through all ordinary sizes of screen cloth, unless the screening is impregnated with a substance such as Tanglefoot.

Prevalence in Trickling Filters

There is a seasonal variation in the prevalence of trickling-filter flies, a vertical variation in the larval infestation of filters, and a variation in prevalence at different sewage works. The seasonal variation in fly breeding is associated chiefly with prevailing temperatures and the thickness of the film on the filter ballast. Larvae and pupae are found throughout the depth of trickling filter. They occur in greatest concentration, however, in the zone 3 to 12 inches from the surface.

There is an appreciable variation in fly nuisance at different treatment works. This is due chiefly to structural differences in the filter beds and to variations in methods of plant operation. Two structural conditions seem to favor fly breeding: (1) construction of filters with open walls; and (2) use of surface ballast of large size. Both of these afford moist cavities where the mature insect can emerge from the pupa and where eggs can be laid without exposing the fly to currents of liquid which will drown it or wash it away. As to differences in operation, deposition of excessive amounts of solids in the bed, due to poor preliminary removal of suspended matter or to choking of the surface layer by fungal growths, will encourage fly development.

Control of Psychoda

A number of different ways have been suggested or are in use for controlling or preventing the development of Psychoda in trickling filters. These include biological control by the natural enemies of Psychoda—birds and predatory flies, spiders and mites and parasites, and by animals which compete for the food of Psychoda—water springtails, spiders and mites, snails, leeches and worms. Next is chemical control by the use of repellents, by contact insecticides and by film-destroying compounds. The third method is by physical control through burning, flooding, drying, or by surface barriers and tight walls and by glass-overs or other covers.

There seems to be little hope of securing adequate control of the Psychoda by biological means. A certain degree of biological checking of fly development undoubtedly exists. There seems to be no known biological agency, however, that can be relied upon to prevent fly infestation of trickling filters. Experience with chemical control agents seems to have established the value of kerosene and also ortho-dichlorobenzene, as well as mixtures of these substances or of kerosene and pyrethrum for the destruction of adult flies. Substantial destruction of fly larvae appears to have been accomplished by chlorination, the benefits seemingly being caused largely by non-seasonal unloading of filter slime. The use of creosote is favorably reported, as is high acidity of the applied sewage. From a careful study it appears that physical control of fly infestation of trickling filters is distinctly more satisfactory or promising than are biological or chemical methods. With the exception of drying, all the physical methods seem to fulfill their purpose quite well or to give promise of being able to do so. For the destruction or confining of adult flies, burning and covering are of value. For larva control, flooding is an established procedure. The use of proper surface ballast and tight walls needs further study.

ACKNOWLEDGMENT.—From a paper presented at the Eighth Annual Conference of the Pennsylvania Sewage Works Association. Much of the material brought together in the complete paper was collected in a study made by the author as Research Associate of Metcalf & Eddy, consulting engineers, Boston, Mass. Many sources of information were consulted, and the paper was presented as a summary of experience, with a view to aiding further researches as well as answering some of the questions of the plant operator.

New Highway Design and Construction in Germany

By **DR. ING. PH. A. RAPPAPORT**
Essen, Germany

THE first German motor road planned by the Rhine province between Bonn and Düesseldorf and recently finished has one large road 40 feet wide, divided in the middle by a white line and on each side a shoulder 5.75 feet wide to accommodate damaged cars. It is double the width of the usual American highways and has in both directions two tracks, each 10 feet wide. The road is constructed to allow for a speed of 75 miles an hour. The smallest radius of curvature is about 3,300 feet, and because the radius is so great the curves are not superelevated. The cross incline is everywhere 2.5 per cent for pavement and 3 per cent for tar-bound macadam. The sight distance at all points is at least 1,000 feet. At the beginning and end of the motor way there are "traffic circles" with a diameter of 330 feet to connect the highway with the ordinary traffic roads. Some miles of the road are paved with basalt stones, but the greater part is surfaced by tar-bound macadam.

The new highways now under construction by the Reich are built in a different way. There are two independent roads, each 23 feet wide for both directions. Between these two roads there is an unpaved "separating strip" 17 feet wide. This strip is to be planted with evergreen bushes or hedges, to restrict the glare of the motor-car lamps. Also the side spaces, 5 feet wide, are to be bounded by hedges. The highways will not have any crossings at grade with other roads or railways. The connection with the ordinary road net is to be arranged at some few points called "motor road stations." The design aims to harmonize the new highways with the surrounding landscape and to avoid making the roads too straight so as to be monotonous.

The two roads of the new highways, quite independent one from the other, can be planned at different heights, especially in mountainous districts. The highways are constructed for a speed of 125 miles an hour and therefore one must be able to see ahead to a distance of 2,300 feet, but that may not be possible everywhere, particularly in hilly districts. The radius of curvature in flat countries will be not less than 6,500 feet. It is intended to superelevate the curves, but not more than 5 per cent even at the shortest radius.

Courtesy of the Tar Road Building Co., Essen, Germany

THE NEW HIGHWAY BETWEEN COLOGNE AND DUESSELDORF

The highways are to be surfaced with tar-bound or bituminous macadam or by cement concrete of different kinds or by ordinary paving stones.

One of the principal ideas in building these highways is to employ as many workmen as possible and to use only home materials. The highways are built by the new "Reich Motor Road Society" and superintended by the "General Inspector of German Roads." The first spadeful of earth was dug personally by Chancellor Adolf Hitler, and there is no doubt that through the new highways one may expect much progress of the whole German motor development.

AIRPLANE VIEW SHOWING THE CONNECTION OF THE BONN-COLOGNE HIGHWAY WITH OTHER HIGHWAYS

Photograph by courtesy of the Road-building Company, Cologne, Germany

FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

A Country Park for City Dwellers—and Others

ROCHESTER, MINN.—Within a half-hour's motor ride from Rochester, in Olmsted County, Minn., is Grandview Scenic Park—a dream come true. Years ago Jay W. Wicker, a business man of Rochester, began acquiring tracts of wooded land adjacent to his farm, visioning a comprehensive plan for a recreational place for city people. As the picture grew, he realized that 200 of his 465 acres were timberland with many varieties of trees and shrubs; that the area was dotted with springs of cool, clear water; that many kinds of birds and animals made their homes there; that wild grapevines formed natural swings for children; that out of the limestone formation in the 110-foot palisades grew large trees, leaning out over a stream, and that farther down stretched a 1,000-foot chain of spring pools; that lily plants and muskrats were incompatible dwellers in the ponds; that many varieties of wild flowers colored the ground; that honey bees were seeking the blooms of the basswood trees; and that here Nature was most delightfully at home.

Grandview Scenic Park, on the Wicker Farm, is now thoroughly appreciated by the many who visit it and use its facilities for recreation. At the entrance to the park stands Mr. Wicker's former residence, now containing a ballroom, a private dining room and guest rooms, with all modern conveniences. A stroll through the park, or a more active hike, reveals many items of interest and charm. Baby 'coons and foxes are playing, or trailing after their parents, the muskrats are cutting off the lily stems and building their huts; and native fish and others are jumping in the ponds and streams. The park has been designated as a state game refuge—so all these creatures are enjoying the freedom of home.

Reforestation goes on while the timber is cleared of dead trees, many of whose stumps are left to serve as seats. Mr. Wicker has never cut a live tree, and he is planting from his own nursery everything in plant life that goes into the park. The program is extensive, and part of it especially interests the squirrels, for whom numerous nut-bearing trees are being provided. No one is allowed to gather fall nuts, which are the natural foods for many animals in winter.

The swimming hole, shown in one of the pictures, has a rock and sand bottom, and is spring-fed. The water is from 6 inches to 6 feet deep. A new swimming pool is being built, 200 by 150 feet, with a sand bottom and a depth of 1 to 7 feet. There is a graded beach, and a bathhouse. Playground equipment, courts for paddle tennis, horseshoe and volleyball, picnic tables and benches, ovens, piles of fuel throughout the park, garbage depositories, a large shelter — these are some of the practical provisions. An 18-hole golf course has just been laid out.

One of the most attractive features of the park is the bird sanctuary. Out of stone, of which there is an abundance in the park, tall feeding platforms have been constructed among the trees, and over 200 hollow bird houses have been placed among the branches. Two of the illustrations show some of these interesting details, with a glimpse of Mr. Wicker.

For many years this farmer who once planted a yearly crop has been growing men and women. He has given over his country home periodically for social good times among the young folk of his community. He gets no financial compensation, and is one of the few philanthropic rural people left in our community.

PAUL F. SCHMIDT,
Director of City Recreation.

AT RIGHT, THE SWIMMING POOL, GRANDVIEW SCENIC PARK

ABOVE AND AT RIGHT, HOLLOW BIRD HOUSES AT FOOT OF A FEEDING PLATFORM AND IN THE BRANCHES OF A TREE

Novel Features in Proposed Norwalk Charter

NORWALK, CONN.—The Municipal Consultant Service of the National Municipal League has recently drafted for the Charter Revision Committee of Norwalk a city manager charter following in many respects the "Model Charter" but without proportional representation.

The charter offers a rather novel combination of the board of estimate and apportionment with the manager plan. The board is to consist of a ceremonial mayor and four members named by the council on the nomination of the manager. The manager presents his budget to this body. When it has given its approval, no item can be increased except by seven affirmative votes at a joint meeting of the council and board of estimate. The council has seven members including the ceremonial mayor.

The most novel feature of the proposed charter, however, is its treatment of the relationship between the built-up portion of the city and the very large rural area of the former town of Norwalk included since 1913 in the city limits. The present charter provides for supplying police service, fire protection, and sewers by a taxing district comprising the old cities of Norwalk and South Norwalk and the old East Norwalk Fire District. After 21 years of experience serious anomalies are apparent. Outside this district, some sections have one or more services and do not pay for them, while others should have them and can't get them. The new charter deals with this problem boldly by extending police protection to the whole city and putting the other services on a service-charge basis. Garbage collection will be billed to the occupiers of all premises; sewer service will be paid for on the basis of the size of sewer outlets; 10 per cent of the cost of fire protection, exclusive of hydrant rental, will be levied upon the assessed valuation of all property, and the remainder of the cost, including hydrant rental, will be levied on the valuation of buildings located within 500 feet of a hydrant and 1½ miles of a fully paid fire department. It is believed that in this way these services can be extended freely and that those who benefit by them will pay for them.

DORIS DARMSTADTER.

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Progress Made in Planning in Fairfield County

BRIDGEPORT, CONN. — The Fairfield County Planning Association, with headquarters in Bridgeport, held its fourth annual Field Day at Putnam Park, Redding, on July 10. Among the speakers were some of national prominence: Frederic A. Delano, Chairman, National Planning Board; Colonel Willard T. Chevalier, Publishing Director, *Engineering News-Record*; Dr. Wm. L. Slate, Chairman, Connecticut State Planning Board; Judge Raymond E. Baldwin, Connecticut State Legislature; Mrs. Charles Sumner Bird, of Walpole, Mass. Joseph T. Woodruff, consultant of the New England Regional Planning Commission and Consulting Engineer of the Fairfield County Planning Association, presented the Association's plan for Fairfield County and a progress report for the past year. Outstanding recommendations for the county are:

Five parkways, and a suggested system of cross-country roads.

Three beach parks on the Sound.

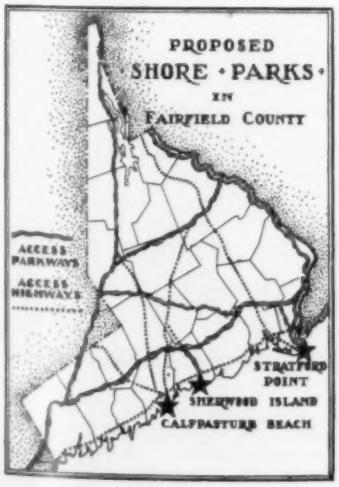
11,000 acres of town and state parks by 1950, half to be in large units throughout the county.

Major Circulation

Construction now under way on the Merritt Parkway marks a step toward realization of the major circulation plan. This past year has seen a change in the plans for this route, which will run across the county parallel to the Boston Post Road from the Hutchinson River Parkway in Westchester County, New York State, to the Housatonic River, the eastern border of the county. An accomplishment of the Association has been in bringing about a change in this project from an eight-lane super-highway for mixed traffic with little prospect for grade separations to a four-lane, grade-separated, divided-traffic parkway for pleasure traffic only.

Credit is due the state officials for their whole-hearted cooperation. Two sections are actually under construction, with one over-pass practically completed.

There is still work for the Association, however, in influencing better coordination between landscape architect and engineer. The rugged nature of the terrain through which this parkway will pass requires the trained judgment of one who can make the most of natural landscape in choosing the right-of-way.



LORDSHIP BEACH, STRATFORD, CONN.

Parks

Proposed layouts have been drawn by the Association for three beach parks at Calfpasture Beach in Norwalk, Sherwood Island in Westport, and Stratford Point. Interesting because of its possibilities is the proposed development of Sherwood Island. Here the problem has been the inaccessibility of the already state-owned beach. The Association's plan called for a parkway approach connecting with the Boston Post Road and the Merritt Parkway. Carried out, this would make accessible a beach with a total capacity for approximately 15,000 people.

Inland state parks have been proposed at various locations throughout the county to preserve natural beauty-spots for the use of future generations.

Protective Legislation

In order to facilitate planning and protective control for the orderly growth and development of the county, a compilation is being made of state laws affecting the making and carrying-out of municipal planning in the state of Connecticut and Fairfield County. An attempt is being made to include all laws which will directly or indirectly affect the making or carrying-out of a plan for borough, town, city, county and state.

These are only high lights of the Fairfield County Plan in operation. To quote Mr. Woodruff, "There is work to be done! The Merritt Parkway has only started. There are many cooperative problems to be solved."

Through its membership and technical staff, the Fairfield County Planning Association has been a strong influence towards the right development of the coun-

PROPOSED ADDITION TO CALFPASTURE BEACH, NORWALK, CONN.

ty. With an increasing membership and with the local, state, regional and national recognition already achieved, it bids well to be a permanent factor in the future, measuring all projects against a yardstick of comprehensive planning technique.

ANDRE M. FAURE,
Assistant to the Consulting Engineer.

Another Substantial Electric Rate Reduction

AKRON, OHIO.—Following the rate settlement between the city of Cincinnati and the public utilities serving it with electricity,* another interesting rate settlement was consummated in Akron under somewhat similar conditions.

Late in 1932 the Council of the city of Akron was considering a rate offer made by the Ohio Edison Company. After several months of dicussion, the writer was asked to prepare a rate schedule more in line with existing conditions and one that would secure a larger reduction to domestic and commercial consumers. This rate schedule was set up and incorporated into an ordinance passed April 11, 1933.

The new terms were not accepted by the Ohio Edison Company, which appealed to the Public Utilities Commission of Ohio, and was in turn ordered by the Commission to proceed at once with a physical valuation of its property, and to make other studies such as reproduction costs of facilities and allocation of its property used and useful in serving the Akron district. The company proceeded to do this work, and employed an engineering firm to assist it.

The city of Akron, early this year, employed the firm of Burns & McDonnell to assist it in the preparation of its rate case and to prepare preliminary plans and estimates of a municipal electric system designed to take care of all classes of consumers, industrial, commercial, and residential, in the city of Akron, there being a further provision that an attempt should be made to negotiate a rate acceptable to both parties without a hearing before the Commission. After the engineering work was practically completed, and the facts established as to operating expenses, depreciation, and actual value of property necessary, a general discussion was entered into, attended by both groups of engineers, and city and company officials. A rate schedule covering residential and commercial consumers was set up which so nearly approximated the provisions set up in the arbitrary ordinance that an agreement was reached by the company and the city on rate schedules shown below for a term of three years beginning May 1, 1933. All consumers of record as of May 1, 1933, to date, will receive a cash rebate.

In general, the reduction to residential consumers approximates 23 per cent, although this varies owing to different conditions of connected load and consumer's use of the energy supplied. The former and present rate schedules (net) for domestic use are as follows:

Former	*Present*
First 10 kwh @ 6½c	First 20 kwh @ 5c
Next 20 " @ 6c	Next 30 " @ 4c
" 35 " @ 5c	" 50 " @ 3½c
" 35 " @ 3c	" 100 " @ 2½c
All over 100 kwh @ 2½c	All over 200 kwh @ 1½c

The average use per customer in the Akron district has been 65 kwh per month, which under the old rate cost the consumer $3.60, and under the new rate is reduced to $2.68.

In the commercial schedule a straight "block" rate is provided for the small user, starting at 5c per kwh for the first 100 kwh and grading down to 3c after 3,000 kwh consumption.

Heretofore, the small commercial consumer paid for the first 60 hours' use of his demand, which was usually taken as 100 per cent of his connected load, at the top rate of 6½c per kwh.

In addition to this schedule there is an optional commercial schedule which contains a demand charge, but the latter as well as the energy charge are lower than formerly.

The result of the rate negotiation has been that with the above schedules set up, an immediate reduction in domestic consumer's bills of $437,000 a year is effective, and a reduction of $183,000 per year is made to commercial consumers, making a total of $620,000 per year for the two classes.

H. B. BIXLER,
Commissioner of Public Utilities.

*See THE AMERICAN CITY for August, 1934, p. 42.

A Backward Step

THE photographs below tell almost all their own story, reported in the Memphis *Press-Scimitar* early in the summer. The elms that lie where they fell had been planted on Rossville Boulevard, Chattanooga, as a memorial to Hamilton County's soldier dead, but they obscured the billboards erected by an outdoor advertising company. When Chattanooga awoke to find that the trees had been cut down, indignant protests were made to the billboard company, and in the dark of night the billboards were torn down by some of the more indignant citizens. It is stated that the manager of the advertising company claimed that the workmen had been instructed only to trim the trees, and that he promised to replace the trees with others of similar growth, if nursery men advised that this could be done.

Courtesy of the Chattanooga Times

THESE BEAUTIFUL TREES IN FRONT OF THE CLIFTON HILLS SCHOOL, CHATTANOOGA, TENN., WERE LEFT UNTOUCHED WHEN CARELESS WORKERS SLAUGHTERED THE NEIGHBORING 12-YEAR-OLD MEMORIAL ELMS, SHOWN LYING ON THE GROUND IN THE RIGHT-HAND PICTURE, REVEALING THE BILLBOARDS

TRAFFIC CONTROL AND FACILITATION

Conducted by Publications Committee, Institute of Traffic Engineers, 175 Fifth Ave., New York

Maxwell Halsey, Chairman, Harry Hemmings, Reyburn Hoffman, Benoit Laberge, Theodore T. McCroskey, Donald M. McNeil, A. J. Naquin, Hawley S. Simpson, Arthur G. Straetz, Peter J. Stupka, Lawrence S. Tuttle, John C. Wrighton

What Uniform Practice Can Accomplish in Public Safety

IF street and highway traffic all over the country could move in a uniform manner, the benefit to all concerned would be tremendous. These questions are answered: 1. Just what is meant by uniform practice or uniform movement of traffic? 2. What would be its benefits? 3. Can such uniformity be brought about? How?

What Uniform Practice Means

Uniformity includes the design of the highway itself, and the signs and signals on it; the habits of drivers and pedestrians on the street and highway; and the methods of the police in dealing with these people.

Uniformity in highway design does not mean that all streets and roads must be built of the same material or to the same specification. Uniformity, for our purpose, means that the motorist should not be exposed to unexpected hazard by some sudden change in the highway conditions. A careful driver can safely negotiate a road in which *all* the turns are rather sharp and not banked, but if he comes to one such turn after being accustomed to a series of long, easy curves he is likely to go into the ditch. If curb corners are rounded in some places and sharp in others, if crowns are high in some places and low in others, the strain and the hazard to the driver are greatly increased.

Uniform Signs and Police Treatment

Uniformity of signs and signals is especially important. The motorist has a right to expect that these will always be in the same place and mean the same thing, in a metropolis, village or open country, in Maine, Kansas or California.

The motorist also is entitled to expect uniform treatment by the police. Where traffic at an intersection is directed by an officer, his arm signals should be given with military precision and always the same.

This also applies to the enforcement of speed restrictions. If signs tell the motorist that the speed limit is 25, and he sees the traffic moving at 45 without hindrance, it doesn't seem reasonable if in the next town, or in the same town next month, he is arrested for going 28. The same may be said for the enforcement of parking prohibitions or limits. It seems obvious that a parking sign or any other sign should mean what it says, and that if it is decided not to enforce it, *take it down.*

Uniformity also applies to the general methods and attitude of officers in giving warnings, tickets, and arrests, and to the method of handling these cases in the courts and in the "cafeteria courts" or traffic violations bureaus.

When the motorist receives the same kind of information everywhere, through highway design, signs and police officers, he may then be expected to behave more uniformly himself—with regard to passing, right-of-way, the yellow light, hand signals, careful driving.

The Benefit of Uniformity

The benefit of uniformity is the winning of the cooperation of the driver with officers and with the courts. If drivers get a general impression that the handling of traffic in a community is awkward and stupid, if they see frequent violation by others, if they must hunt for a variety of nondescript signs, and especially if they are bawled out by an officer when they really did not understand what he wanted them to do, then they say, quite naturally, "To hell with all rules and all policemen." Such an attitude, on the part of any great number of motorists, is not only fatal to safety but greatly increases the work and the difficulties of the police because it puts public opinion against them instead of with them.

Play Fair with the Driver

If, on the other hand, the average driver gets the impression that the community where he lives or where he is visiting is really playing fair with him on traffic, is controlling traffic in a simple, uniform, and sympathetic way, he is quick to cooperate. Such a town will have fewer arrests and also fewer accidents. And *it is the accident record, not the arrest record, which really measures the efficiency of the police department and all the other traffic agencies.*

Reasonable uniformity will forever remove the alibi of the arrested driver that he didn't see the sign or didn't understand the signal. A more cooperative attitude on the part of the drivers generally will reduce the violations, the evasions, and the necessity for large numbers of arrests. This means a reduction of the load on the courts, an opportunity for the judges to give more adequate attention to the cases they do have to handle, and a saving of court costs and taxpayers' money. In the many calculations of the costs of accidents, it is surprising that we do not place more emphasis on the tremendous cost of maintaining our traffic courts—commended to the attention of the Taxpayers Associations.

Is Uniformity Practicable?

Following are several important points in our favor:

1. The public is getting more and more aroused over traffic accidents, costs and tangles, and more ready to accept common-sense improvements. Even the politicians are coming to realize this.

2. There is the advantage of a recognized national standard of traffic laws, ordinances, signs and signals, through the work of the National Conference on Street and Highway Safety.

3. There has been great improvement in recent years, in the uniform up-to-date design of rural highways through the influence of the U. S. Bureau of Public Roads and its Federal aid to the state highway departments. There is now a decided trend toward the use of Federal and state money on city streets, which means that the Federal and state government can exercise quite a bit of pressure for uniformity, not only in the design of these streets, but in the control of traffic on them.

The depression has made the American people more critical of their public officials. They are demanding efficiency and economy in municipal, state and Federal departments. There is no function of government that comes closer to the average citizen than the function of traffic facilitation and control. Police departments as well as other traffic agencies have a wonderful opportunity to make a big hit with the public—the voters and the taxpayers—by putting into practice these uniform standards and methods which, already proved by experience, lie ready for use.

If a thousand recruits in the army can be trained in a few weeks to go through the manual of arms with clock-like regularity, the much fewer and simpler motions needed by the "corner man" can certainly be taught to him with equal uniformity. I can think of nothing that would make a greater hit with drivers.

—Outline of an address by Sidney J. Williams, Director, Public Safety Division, National Safety Council (Chicago) before the International Association of Chiefs of Police, at Washington, Sept. 25, 1934.

Motor Vehicle Deaths

JANUARY-AUGUST, inclusive

1934	**21,190**
1933	**18,040**

(National Safety Council estimates)

Compulsory Vehicle-Inspection Reduces Accidents in Memphis

THE city of Memphis, Tenn., the first to pass an ordinance providing for compulsory inspection of all motor vehicles owned by its citizens, is finding, through operation of its municipally owned automobile inspection station, that it is possible to reduce accidents by systematic inspection and correction of mechanical defects.

The plan was outlined and put into practice by Clifford Davis, Vice-Mayor and Commissioner of Fire and Police of Memphis. Commissioner Davis has for many years made a study of safety administration and has spent many years in public safety work, and he is an authority on motor-vehicle administration.

Early in January this year the ordinance was passed establishing the inspection station and making it a misdemeanor, punishable by a fine not less than $1 and not more than $50, for any owner of an automobile or truck to evade inspection, or, failing to pass inspection, to neglect to return for reinspection and approval after having repairs or adjustments made.

Cars are called for inspection by serial numbers, a certain number each day, which keeps a constant flow of vehicles coming in. However, should a motorist find it more convenient to come before he is called, and the station is not congested, he will be given an inspection and will not be required to appear again for six months.

Defects, if found, must be corrected at any garage of the owner's choice, and the vehicle must be returned for reinspection and approval within one week. Each motorist must pay 50 cents when he receives his windshield sticker denoting final approval for a six months' period. Reinspection may be had free of charge at any time if a driver should desire to find out for his own satisfaction whether or not his vehicle is in good condition.

Records show that fatalities during a 2½-month period following the opening of this station have been reduced 25 per cent over a like period of 1933, in spite of an increase in the number of cars over 1933, and a 30 per cent increase in gasoline consumption for the first half of this year.

The vehicle inspection bureau occupies a building formerly used for storage and remodeled by CWA labor to suit present needs. It is 160 x 50 feet and has three Weaver safety lanes of latest type. There two Universal automatic brake testers for passenger cars—one at each side—and a larger brake tester in the center lane for trucks and busses. They are all of the flush type and the last word in brake-testing equipment. There are also three flush type automatic wheel alignment indicators and six Weaver headlight testers for determining the aim of the lights.

The average time required for inspection is 3½ minutes, and the driver does not have to leave the car. The capacity of the inspection equipment is 1,000 cars per 8-hour day. Many prominent fleet owners are making a practice of having all their vehicles inspected once a month, to carry out the safety work in their own organizations. Commissioner Davis has made the statement that the citizens are very enthusiastic over the plan, and people are happy when their cars are approved in the first inspection. "Our city would not permit the closing of this station under any condition," says Mr. Davis.

Another safety feature is the dispensing of literature setting forth safe driving rules. This literature is to be varied with each inspection period, thus having the effect of a driving school.

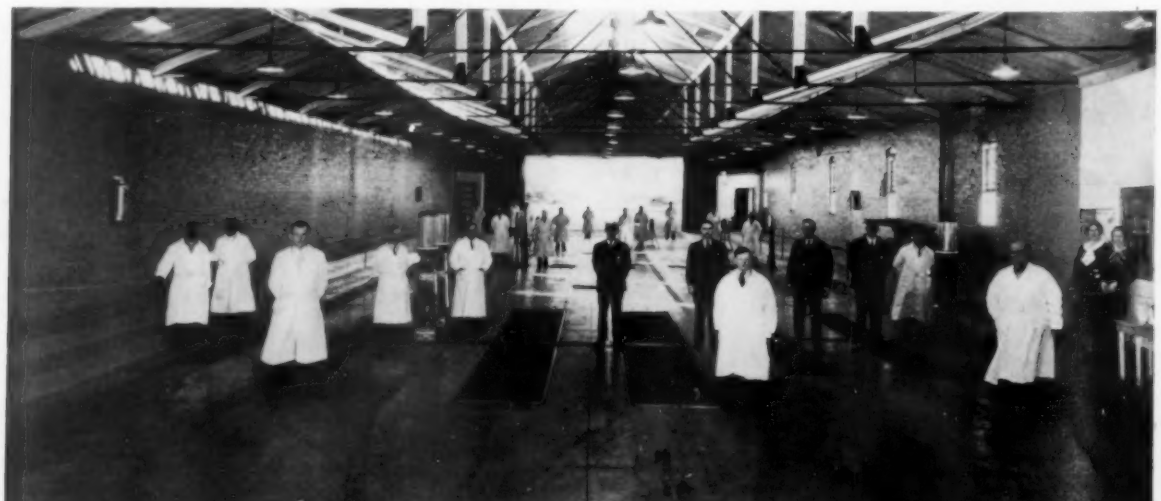
Some 200 cities have requested copies of the Memphis station's plan of operation. Some have sent representatives to Memphis to see it in operation.

Statewide Survey Shows Slovenly Observance of Rules

THE Massachusetts Highway Accident Survey, begun in December, 1933, and mentioned in this department in the February, 1934, issue, was the most extensive of its type undertaken in the United States. This survey included the study of 120,000 accident cases in Massachusetts recorded within the past four years. It made a statewide, one-week traffic count to put the accident rate into its proper relation with the traffic volume. It obtained a cross-section of opinion through a questionnaire submitted to 10,000 motorists.

The speed of motor vehicles was studied at 3,000 points in the state, with long-time observations at 260 strategic stations. The average speed of all cars is 34 miles per hour. On all the major highways of the state a considerable group was found driving in excess of 60 miles an hour. On the air-line route to New York speed in excess of 80 miles an hour was not uncommon. These fast cars are constantly passing the main volume of travel. An error of judgment on the part of any driver may result in a collision. In a 35-mile stretch of new highway on Route 9, constructed to be the safest in the United States, 103 accidents due to speed have occurred within the year.

The most frequent type of accident on state highways is the rear-end collision between a stopped car and a moving car. In 500 miles of highway 1,358 stopped cars were recorded by the cruising cars of the survey, 80 per cent of them standing on a traveled surface. Twelve per cent of these were dangerously near points of hazard, such as hillcrests and curves. A corresponding number of cars were found parked on the wrong side of the road, and facing the wrong way;



MEMPHIS VEHICLE INSPECTORS READY FOR 1,000 CARS PER EIGHT HOURS

and one-third of the cars found standing on the highway at night had no lights burning. Only one car in ten found standing in the path of traffic had suffered a breakdown or a flat tire. Half of all the standing cars had been left in the roadway negligently. Forty per cent were there because the highway had insufficient shoulder width to permit them to pull off.

When a cruising car engaged in the survey was traveling in the right lane of a marked highway, only one-fifth of the passing cars used the horn signal. Ninety cars were observed that passed the cruiser on a blind curve or hillcrest. Sunday drivers were found to be more obedient to all laws than week-day and night-time drivers.

Although in a questionnaire answered by motorists 90 per cent favored a law requiring the use of hand signals, it was observed that in cold or stormy weather practically no one used a hand signal, even though the turning movement affected nearby traffic.

Of the various types of hazards studied, blind curves appeared to have the highest rate of violation. Passing on hills occurred next in order, and then careless driving at dangerous intersections, and a disregard of railroad crossings.

Truck and bus operators were found to be more obedient than drivers at the wheel of passenger vehicles. The commercial driver, however, is the one who most often stops his vehicle on the highway under dangerous conditions.

The obedience of motorists to traffic control signals is five times better than their obedience to stop signs. Half of the latter drivers, however, did slow down before entering the intersection. The other half entered at a speed greater than 15 miles per hour and with little regard to cross traffic.

As to pedestrian observance of traffic light signals, it was recorded that the largest number crossed against the red light between the hours of 5:30 and 6:00 P. M., when traffic is heaviest and in the greatest hurry.

Two interesting checks were made as to the physical condition of vehicles. Of 250,000 tires examined, 67 per cent were found to have good treads; 30 per cent were worn smooth; and 3 per cent had fabric showing. One-half of the vehicles had all good tires, thus ensuring the minimum chance of skidding and blowout.

Of the headlights observed at night, 60 per cent did not glare; one-fifth were of medium glare; and one-fifth had a dangerous glare.

For further information, address Massachusetts Safety Council, 6 Beacon Street, Boston.

Traffic Control Standards in City Will Be Painted

ACCORDING to Safety Commissioner Frank R. Comila, the traffic control standards throughout the city of New Orleans are to be painted with alternate black and aluminum stripes 10 inches wide. The mechanism on top of the posts will be painted aluminum. Work will begin on the Canal Street signal posts at North Peters Street, and the crew will work toward the lake until it has painted the 60 signals on Canal Street.

The remaining 215 traffic standards throughout the city will receive similar decorations. A test made on posts at Tulane Avenue and South Board Street during recent months has proved the paint and design highly desirable as to both visibility and durability.

Submitted by A. J. NAQUIN.

The Pedestrian Factor; Unlighted Highways

MANY police departments, says R. E. Simpson in his paper presented at the current Illuminating Engineering Society meeting at Baltimore, not only record the hour and location of fatalities but also the manner of occurrence—that is, whether the fatality was due to collision of an automobile with a pedestrian, a trolley, a railway train, or a fixed object. Since approximately 40 per cent of the returns give this information, the results may be taken as fairly representative. Pedestrians hit by automobiles account for 69 per cent of all the fatalities, while all other types of accidents account for the remaining 31 per cent. Of the pedestrian fatalities, 66 per cent occurred at night and 34 per cent during the day. All of this leads up to a consideration of another factor which has a bearing on public safety, namely, pedestrian exposure in the streets.

In only one instance was there a report of an automobile invading the sidewalk and causing a fatality. In all other instances, presumably, the pedestrian victim was on the street as distinguished from the sidewalk. Although there have been many counts made to determine the number of pedestrians traversing the sidewalks, there have been none, so far as we know, to show the number of pedestrians crossing the streets both at and between the intersections. Considerable information along this line has been collected in the course of the survey, but it has not yet been analyzed sufficiently to be reported at this time. We were able to secure a large number of 14- to 18-hour traffic counts and a smaller but respectable number of 24-hour traffic counts, both automobile and pedestrian street crossing. The two traffic flow charts shown below were made up by averaging these traffic counts at hourly intervals. They are put forth rather timidly as a by-product not contemplated when the survey was started. It is not claimed that they are strictly accurate, but enough checks have been made to prove that the use of these charts, possibly slightly amended by the results of further counts under way, will enable one to get a fairly accurate idea of the total traffic exposure on main thoroughfares.

Accident Record on Lighted and Unlighted Highways

A comparison of "before and after" accident records on suburban highways is afforded by a study made on two important roads in the vicinity of New York City. On the new Mount Vernon Highway between Washington and Mount Vernon the lights were in service from the opening of the highway until July 1, 1933. Thereafter all lights were cut out of service. A similar condition existed with respect to the Saw Mill River Parkway and Hutchinson River Parkway in Westchester County, New York. The comparative results are shown below.

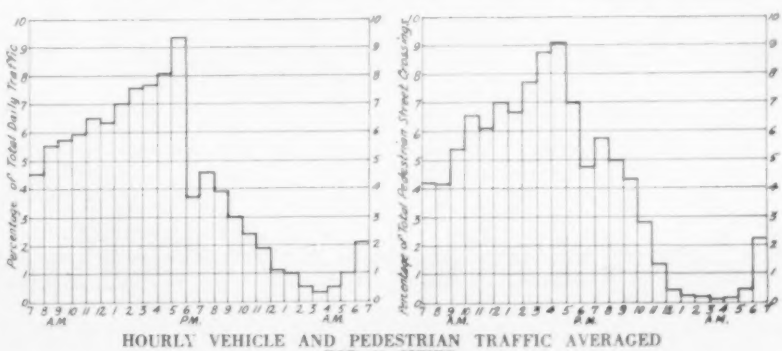
When the lights on these three highways were cut out of service, primarily because of lack of funds, it was felt that the illumination provided by automobile headlights would serve the requirements of safety. The accident record portrayed above tends to show that the present type of automobile headlights falls far short of producing the degree of visibility or ability to see that is necessary for safe night driving under present traffic conditions.

MOUNT VERNON HIGHWAY, AT NIGHT

July 1, 1932, to Dec. 1, 1932...	All lights in service
Million vehicle miles.....	3.13
Number of accidents.....	9
Number accidents per mvm.	2.87
July 1, 1933, to Dec. 1, 1933...	All lights out
Million vehicle miles.....	3.13
Number of accidents.....	22
Number accidents per mvm.	7.02

SAW MILL RIVER AND HUTCHINSON RIVER PARKWAYS, AT NIGHT

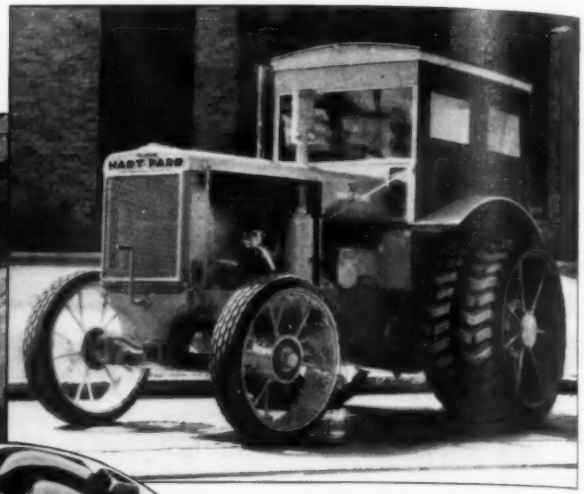
Jan. 1, 1933, to July 1, 1933..	All lights in service
Million vehicle miles.....	7.9
Number of accidents.....	59
Number accidents per mvm.	7.54
Jan. 1, 1933, to July 1, 1934...	All lights out
Million vehicle miles.....	7.9
Number of accidents.....	81
Number accidents per mvm.	10.25



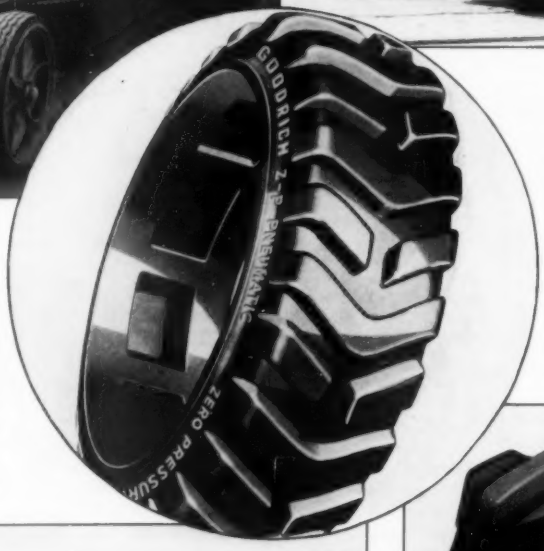
HOURLY VEHICLE AND PEDESTRIAN TRAFFIC AVERAGED FOR 60 CITIES

NEW TYPE GOODRICH TIRE
CUTS ROAD MAINTENANCE TIME 25%

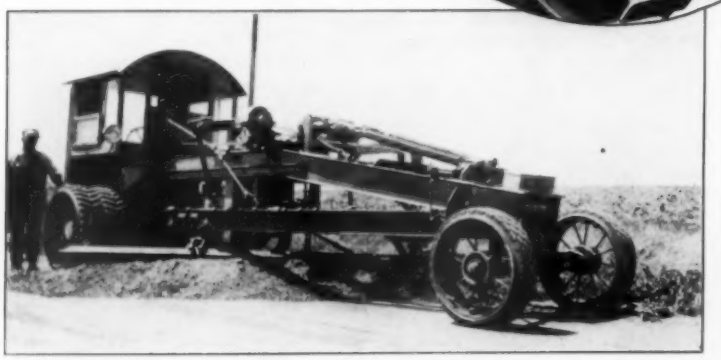
USES NO AIR PRESSURE
CAN'T BLOW OUT OR GO FLAT



● You can get the figures right from highway department records. Goodrich Z-P Pneumatic tires cut road maintenance time 25%. In some cases as much as 40%. How? Because the extra-wide traction tread provides more power—stops bouncing — lessens slipping. Road maintainers travel faster, get more work done. The grader shown above is an Allis-Chalmers Speed Patrol working highways near Flint, Mich.



● Highway tractors develop full power, full speed with Z-P tires. Work capacity is increased 25% or more. Tests by the Ohio State Highway Department showed a tractor on solid tires pulled a snow broom at 4 miles per hour. With Z-P tires it traveled 6 miles per hour. Speed with broom up was 20 compared to 15 miles per hour on solids. You always save with this new tire—the tire with the giant air cavity and the big cleat tread. On gasoline and oil alone, costs drop 18% to 20%.



● This Iowa State Highway Commission road maintainer does more work in less time with Z-P (Zero Pressure) Pneumatic Tires.

HOW Z-P TIRES SAVE MONEY

● End tire troubles on graders, mowers, maintainers and tractors. Get the Goodrich Z-P (Zero Pressure) Pneumatic—the tire that can't go flat. It gives greater traction—eliminates punctures and blow-outs—stops bouncing—reduces tractor upkeep—cuts gas and oil costs—outwears air pressure tires.

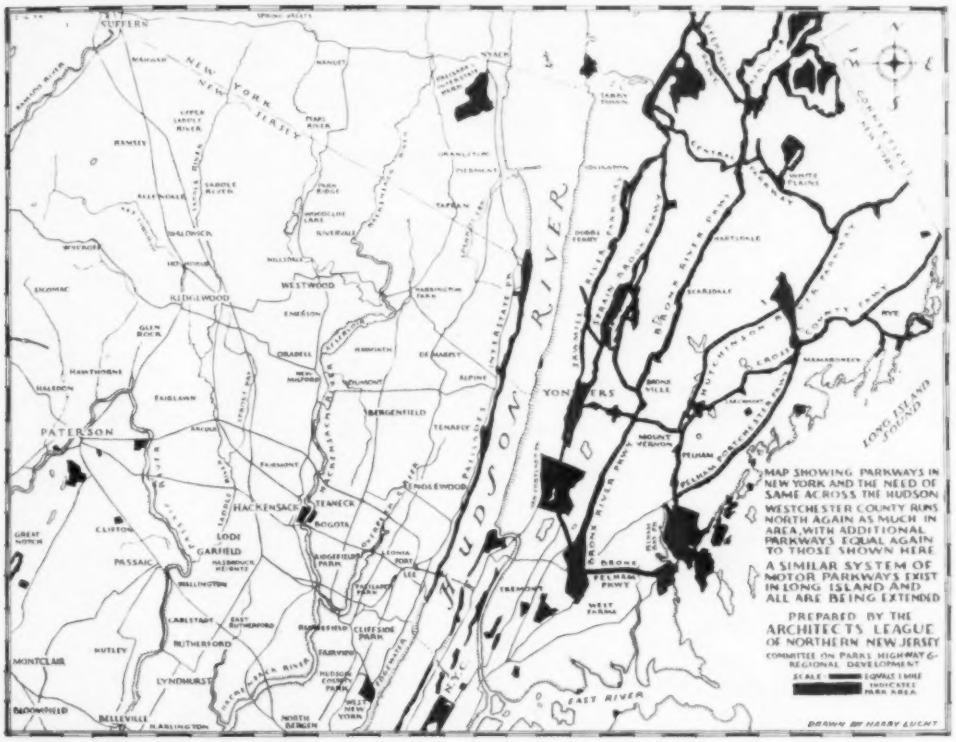
See your Goodrich truck tire dealer or write for complete information on changeovers. . . . Address Department Z-56, The B. F. Goodrich Company, Akron, Ohio.

Goodrich Z-P ZERO PRESSURE Pneumatic Tires

SPECIFY Z-P PNEUMATICS ON ALL YOUR NEW EQUIPMENT

Bergen County Would Emulate Westchester

THE accompanying map shows existing parkways in southeastern New York State, and the need of similar ones on the west side of the Hudson River, in New Jersey. Westchester County, N. Y., reaches north twice the distance shown on the map, with additional parkways equal to those here indicated. In Long Island there is a similar system of motor highways, and all are being extended. This map has been prepared by the Architects League of Northern New Jersey, through its Committee on Parks, Highway and Regional Development, to stimulate interest on the part of individuals and organizations in the rescue of the New Jersey roadside—particularly in Bergen County.


NEW YORK
NEW JERSEY
HUDSON RIVER
PATERSON
HACKENSACK
WESTWOOD
RIDGEWOOD
RUTHERFORD
YONKERS
MOUNT VERNON
NEW ROCHELLE
BRONX
LONG ISLAND SOUND
EAST RIVER
MAP SHOWING PARKWAYS IN NEW YORK AND THE NEED OF SAME ACROSS THE HUDSON
WESTCHESTER COUNTY RUNS NORTH AGAIN AS MUCH IN AREA, WITH ADDITIONAL PARKWAYS EQUAL AGAIN TO THOSE SHOWN HERE
A SIMILAR SYSTEM OF MOTOR PARKWAYS EXIST IN LONG ISLAND AND ALL ARE BEING EXTENDED
PREPARED BY THE ARCHITECTS LEAGUE OF NORTHERN NEW JERSEY
COMMITTEE ON PARKS HIGHWAY & REGIONAL DEVELOPMENT
SCALE
EQUALS TIME INDICATED PARK AREA
DRAWN BY HARRY LUCHT

At a recent meeting of the Architects League of Northern New Jersey the members discussed the effect and possible cure of the cheap roadside development along the new express highways. The feeling prevailed that the League, by virtue of the training of its members and by its existence as a non-profit organization, should as a point of civic duty do everything possible to acquaint its neighbors with the difficulties certain to arise from this at present uncontrolled "ribbon" development. The League recognizes that roadside control is only a part of the development of a given region, and is so closely related to other phases of development as to become quite complex.

As a result of this meeting of the League, President Harry Lucht appointed Henry N. Boucher, landscape architect, as chairman of a Committee on Parks, Highway and Regional Development. The purpose of the Committee is to assemble the best educational matter obtainable on the subjects, to disseminate such information among local civic groups, and in general to further civic interest in regional development. Such a committee can be of immediate help to many communities in supplying them with information on the abuses of roadside development before conditions set in that will make action impossible.

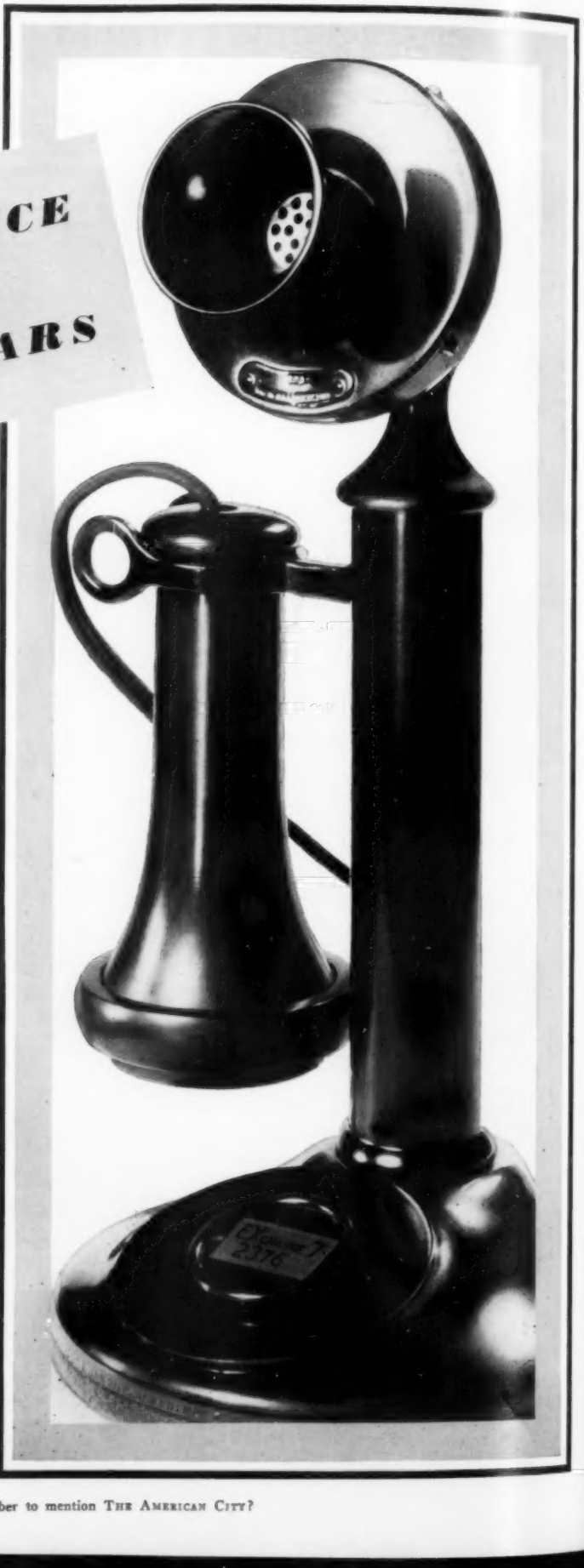
It is not the purpose of the League to work up its own idea; its members feel that the work of the Regional Plan Association offers the best basic guide to follow. Other organizations are expending much effort along these lines, and the League wishes to give active aid and moral support to such work.

The new express highways in northern New Jersey, while predominantly engineering in character, have an undeniable esthetic value by virtue of cleanliness and the open country through which they pass. They are at present wide, and therefore safe—where no roadside stands exist to cut down their widths and restrict traffic. Unless action is taken immediately to preserve abutting property, both their esthetic value and their value as safe lines of rapid transportation will be destroyed completely. Furthermore, the strips of land on either side of such highways after a short-lived increase in value (really minor boom value) deteriorate into undesirable properties of low ratability after roadstand competition reaches a peak. The result is great economic loss to communities en route and even to those at the destination of such highways.

Unfortunately, the New Jersey State Highway Commission is not empowered to make excess condemnation of properties abutting the rights-of-way; consequently, such abutting property cannot at present be controlled unless the county or the municipality takes action through its zoning powers or park or park commissions. In some instances zoning boards have taken a noteworthy step in control of property on the new highways. They can use their power to a still greater extent, and their communities will profit accordingly. In still other recent instances public-spirited citizens have conveyed to their local authorities land along express highways to aid in the preservation of existing beauty.

The Architects League of Northern New Jersey hopes to publish indices of the information in this field that is being disseminated by the press, chambers of commerce, garden clubs, women's clubs, and other civic groups, and wishes to cooperate in conference, study and discussion when requested. The aid of several park and highway engineers, architects and landscape architects can be relied upon from time to time. The Committee will welcome correspondence, which may be addressed to its Chairman, Henry N. Boucher, 160 Market Street, Paterson, N. J., or to the Secretary of the Committee, Clarence H. Tabor, Jr., 45 North Broad Street, Ridgewood, N. J.

GOOD SERVICE THROUGH TRYING YEARS



THROUGH recent trying years there has been no letting down in the quality of your Bell telephone service. On the contrary, improvement has gone steadily on.

On long distance and toll calls, the percentage of calls completed is now higher than ever before. The average time required for making these connections has been reduced from 2.8 minutes in 1929 to 1.5 minutes. Since 1929, mistakes by operators have been reduced one-third and more than 99% of all telephone calls are now handled without error.

The number of service complaints by customers is now the lowest on record and reports of trouble with instruments have decreased 17% since 1929. It is truer than ever that this country enjoys the best telephone service in the world.

The ability of the telephone system to improve its service in difficult years is due to unified management and a plan of operation that has been developed and perfected over the past half-century. In good times and bad, it has proved the wisdom of one policy, one system and universal service.

BELL TELEPHONE SYSTEM

IMPROVING MUNICIPAL ADMINISTRATION

Current Items from the Public Administration Clearing House

City-Federal Relationships to Feature Manager Conference

PRESENT problems of cities will be scrutinized and possible remedies proposed when the International City Managers' Association holds its twenty-first annual conference in St. Louis October 15-17.

The first session of the three-day convention will be devoted to discussion of city-Federal relationships, an important concern of the administrators of the cities and counties under the manager plan. Careful analysis will be made of the Federal Government activities to date on relief, public works and housing, with the object of establishing certain principles by which these activities should be governed in the future, and the relative responsibility of Federal and local governments.

The second day's discussion will center around the ways and means by which administrative officials can maintain contact with the public. "It is recognized that this important responsibility of the administrators must receive much more attention in the future than it has in the past," comments Clarence E. Ridley, Executive Director of the International City Managers' Association, "in order to make certain that the public does not become the prey for the unsound proposals that are being made to them by certain interested minorities who are seeking legislation of special benefit to themselves."

The final day of the convention will be given over to round-table discussions of public utility management, financial problems, police and strikes, and the city manager's responsibility for forced budget reductions.

In addition to the city managers, outstanding leaders in the field of local government will participate in the conference.

For Greater Efficiency in Administering Relief

CITY and county emergency relief administrations should "put their houses order," ready to follow new programs of the Federal Emergency Relief Administration, advises Donald C. Stone, Director of Public Administration Service, in the September issue of *Public Management*, journal of the International City Managers' Association. To accomplish this, according to Mr. Stone, capable persons must be secured for managing the job of local relief, politics must be kept off the scene, and proper standards must be met.

"City, county and state relief administrations should stop immediately the practice of selecting people for jobs in relief departments on the basis of their need for relief," he says. "Employees should be selected purely on the grounds of training, experience and competence. Qualified relief recipients should be urged to apply and take examinations for these jobs, but they must stand on merit only."

The cost of administering relief in a community should be carefully studied, Mr. Stone points out, with a view to determining whether enough competent help is employed. "Paradoxical as it may seem, the best way to reduce relief costs is often to increase the expense of administration," he says. "A trained case worker with a small case load will greatly reduce case costs by better adjusting relief to the needs of the client, by uncovering supplemental revenue, and by effecting constructive treatment in the case."

Heads of local relief agencies should make certain, also, that adequate records and accounting systems have been installed and sufficiently centralized, so that budgets may be carefully managed. Most local emergency relief administrations cover an area too small in population to permit effective work, Mr. Stone believes. Only those units should be continued which are big enough to warrant employment of a full-time, properly-trained and experienced staff. Most urban centers of 15,000 or more population will have a big enough relief load to administer as a unit. Smaller cities and centers are probably better off if administered as part of a district, by the state.

Municipal Ordinances to Fit the Times

CITY ordinances recently passed, to fit changing times and new conditions, are listed in the current issue of the *United States Municipal News*, bi-weekly record of municipal progress published by the American Municipal Association and the U. S. Conference of Mayors. Many of these are in the interest of furthering public safety.

A recent Rochester, N. Y., ordinance prohibits careless burning of discarded battery boxes. The great danger of lead poisoning which lurks in the wood and other material used in the boxes is the reason.

A new sanitary ice ordinance passed by the Grand Rapids, Mich., City Commission provides that all ice manufactured or harvested must originate from a supply of pure water.

Duluth, Minn., is considering a new sanitary code which seeks to prohibit dogs and cats in public dining-rooms and in kitchens where food is prepared for the public. The proposed code would also require the reporting of all cases of tuberculosis within one week after diagnosis.

The City Manager of Cincinnati has been authorized to contract with private institutions for the care of persons under 21 suffering from social diseases.

Miami Beach, Fla., has established an examining board to license and regulate masseurs, sun-ray "experts" and others engaged in treating the human body.

San Francisco has a new ordinance setting up an emergency relief committee. This city also has enacted an ordinance to eliminate charity racketeers by requiring a police license for all drives for money in the name of charity.

Memphis, Tenn., is amending its city code, in order to give the City Planning Commission control over billboards along principal thoroughfares. Under the amended code, applications for billboards and other structures bearing advertising matter must be made to the City Building Commissioner. He is to reject applications when the sign would obstruct the view along a street or be detrimental to the health, safety or general welfare of citizens.

Birth Control Policies of State and Nation Conflict

RELIEF authorities are concerned over the increase in population among destitute families of the nation. But they are impeded from giving advice to families which need and desire it, because of a sixty-year-old Federal law which makes it a penitentiary offense for anyone, even a doctor, to send or to receive through the mails the address of a source of birth control information.

Margaret Sanger, Chairman of the National Committee on Federal Legislation for Birth Control, points out this legal obstruction in the journal of the American Legislators' Association, *State Government*, the September issue of which features various sex problems with which the state is concerned.

Although 47 states permit with restrictions the obtaining of birth control information, the famous Federal "obscenity law" of 1873 classifies the prevention of conception with abortion, pornography and indecency. Even the mailing of scientific literature on the subject, for physicians and hospitals, is prohibited. This confusion has hampered the medical profession and has encouraged a vast and subversive bootleg traffic of unscientific and frequently dangerous methods by commercial agencies exploiting uninformed women. Educated women of today, Mrs. Sanger points out, are limiting the size of their families. She quotes as significant a recent survey which showed that most of the reported abortions are performed upon married women who have had three or more children.

Those who are argue that birth control information is available to anyone who wants it today, since present laws are not enforced against physicians, are wrong in

"THE 'CATERPILLAR' DIESEL SAVES US $123.50 PER MONTH ON FUEL"

—SAYS MR. A. T. LOCK OF BORGER, TEXAS. HE ADDS: "— BESIDES, IT PULLS A MUCH HEAVIER LOAD THAN OUR FORMER GASOLINE TRACTOR."

Less cost—more work accomplished—such results explain the rapidity with which America is going Diesel with "Caterpillar." Power users long hoped for lower fuel cost—"Caterpillar" Diesel has brought it to them, together with simplicity of design, ease of operation and maintenance, sturdy dependability. A full-Diesel type engine, with individual interchangeable fuel injection pumps and valves, and an all-weather sure-starting system. Ask the address of an owner—now nearly 4000 of them—from whom you can learn, first hand, why and how the "Caterpillar" Diesel leads the field. Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

AMERICA GOES DIESEL

With a "Caterpillar" Diesel Fifty Tractor and a "Caterpillar" Road Grader, Bibb County, Georgia, is today building better roads at less cost than ever before.

Four "Caterpillar" Diesel Tractors serve the McKinley Company, one of the contractors building the Oakland, Calif., low-level tunnel road. Work goes on twenty-four hours a day.

Pushing a bulldozer, this "Caterpillar" Diesel Tractor lowers cost for the Dick Company on its contract near Audenried, Penna.

their assumption, says Mrs. Sanger. Women financially able to consult private physicians may obtain contraceptive advice, but other married women cannot do so, because the public hospitals and health agencies to which they go for medical advice do not usually give out the information. A bill brought before the last session of Congress asked an amendment of the old Federal obscenity law, to permit licensed physicians, medical colleges, druggists, hospitals and clinics to circulate birth control information by mail or express. Twenty-four of the states, according to a compilation made by the American Legislators' Association, give tacit consent to dissemination of birth control literature or materials. Twenty-two states have specific restrictions upon notices and advertising, but allow medical advice to be given. Mississippi, however, forbids even oral information. In Connecticut the use of contraceptives is illegal.

Regulating Automobile Graveyards

JUNKING old automobiles has become a problem in cities that want to be neat housekeepers.

The best way of regulating the placement of automobile junk yards—in large cities often a business enterprise—is by a zoning ordinance, according to a report issued by the American Municipal Association and the United States Conference of Mayors. A city's police power has a definite part in overseeing these final resting-places of old automobiles, says the report, whether they are used-car lots, used-parts stores, wrecking establishments, junk yards or dumps. The city needs to be on guard to see that there is no encouragement for auto theft, no menace to health or sanitation, and no depreciation of property values of the neighborhood through unsightliness or untidy methods of operation.

Of approximately 150 cities queried on this common problem, 63 reported ordinances of one kind or another, most of them requiring that new auto junk yards and auto wrecking establishments be located in specified industrial districts or zones. Zoning control, however, does not reach those establishments improperly located and existing before the ordinance was adopted, the report comments. In general, these cities will have a better chance to minimize the auto junk hazard by regulation through a licensing ordinance than through a nuisance ordinance.

The licensing ordinance should be sufficiently broad to cover auto junk yards, second-hand auto or auto-parts or wrecking business. Reasonable regulations include detailed police reporting, and fencing and maintenance of grounds and materials, so as to prevent insanitary conditions and fire hazards.

In any case, the report concludes, the refuse problem extends to more than city boundaries, and cities should support state laws providing a comprehensive regulation both within and outside city limits. Massachusetts and Connecticut have statutes of state-wide application, regulating and licensing second-hand auto dealers by local consent.

Property Reassessing Project Financed by FERA

BRUNSWICK, GA., believes that spending a little money will save more money—that setting up a new, scientific method of assessing the real estate owned in the city will lead to better tax collections. Funds have been secured from the FERA to pay for the investigators, who will reappraise every parcel of land within the city limits. The city is employing Public Administration Service, governmental consultants, as a disinterested outsider, to supervise the white-collar workers who will do the job.

The survey is being made, says F. A. Torras, City Manager of this city of 15,000, to enable better planning of housing within the city, as well as to make possible the fair levying of real estate taxes. Each parcel of land and each building in the city will be inspected in this inventory of real property in Brunswick. Description of the property and the improvements made on it and the value assigned to each piece of land will be prepared in conformance with scientific schedules designed by the advisory service. The survey will be completed in time for the 1935 tax assessment rolls.

"Several cities are contemplating property reassessments with work relief funds," points out Donald C. Stone, Director of Public Administration Service. "These projects, which are beneficial to the city, also bring about the employment of many white-collar workers on relief. Interest in scientific methods of appraisal has grown since cities have begun to realize that they will have fewer citizens contesting assessments on their land if they are backed up with standard procedures. Scientific appraisals are the cornerstone of any property tax system."

Developments in Cooperative Purchasing by Municipalities

AMERICAN cities might well take a lesson from the experience of European cities in developing methods of cooperative purchasing, says Paul V. Betters, Executive Director of the American Municipal Association and the United States Conference of Mayors, who returned last month from a study of municipal problems abroad.

In England, Denmark and Belgium, according to Mr. Betters, the cities have banded together to operate their own municipal insurance companies. The result has been that fire insurance rates have decreased tremendously. In Denmark coal for the many municipal gas plants and oil for the municipal electric plants are ccoperatively purchased.

"By contracting in large quantities at low prices for these two supplies," Mr. Betters comments, "the cities are decidedly benefiting their taxpayers."

Cities of Belgium and Holland also operate their own cooperative banks, and loans are secured at low interest rates.

In this country the latest development in cooperative purchasing has been by the state leagues of municipalities. The Michigan state league has contracted for fire hose for a large number of its member cities. In Wisconsin, the state league has initiated a similar plan. The Virginia League of Municipalities has undertaken a purchasing information service which provides to all cities a confidential list of the unit prices at which other cities are buying materials and supplies. The New York State Conference of Mayors has a similar service.

"Since up to 20 per cent of most municipal budgets goes for purchase of supplies and materials," Mr. Betters points out, "it can be seen that any saving effected has a real value to the taxpayer."

The Need of Sidewalks on Highways

MILWAUKEE County, Wisconsin, has the credit for having accomplished most this year in protecting the pedestrian on highways by providing sidewalks, according to the report of the Highway Sidewalks Committee of the American Society of Municipal Engineers, made to the National Congress on Municipal Engineering and Public Works, in Rochester on September 25. During 1934 Milwaukee County, under Federal Aid employment, has constructed upwards of 20 miles of highway sidewalks.

Statistics on motor accidents to pedestrians, quoted in the Committee's report, show that many fatalities occur because of lack of sidewalks on the highways. During 1932 there were 532 accidents on the rural highways of Pennsylvania to pedestrians who were known to be walking along the highway, as distinguished from others who stepped from behind obstructions such as parked cars or trees.

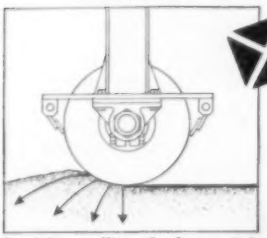
Iowa in the year 1933 reported 158 pedestrians injured or killed as they walked along the highroad. New York State, for January-February, 1934, reported 23 fatal and 107 non-fatal accidents to pedestrians walking on rural highways where no walkways were available.

"If there is anything in which the world is backward in connection with highway development, it is in the matter of highway walkways," said George C. Warren, of Boston, who as General Chairman of the Committee presented the report. Time was when the roadway provided as comfortable passage for pedestrians as for vehicular traffic. The roadways then were not so congested that they could not be used by pedestrians as well as vehicles, then all horse-drawn. Then both had equal legal rights, and they do now. With the rapidly increasing use of the automobile during the past thirty years, however, safety to pedestrians has been entirely eliminated." Government, states, counties and townships have endeavored to protect motor traffic by construction of new, wider and better roadways at a cost of billions of dollars in the aggregate, he commented, but have devoted little to better safety and comfort of the pedestrian.

The Committee report also stressed the fact that better highway lighting should go hand in hand with highway sidewalks, and is equally a part of the necessary protection to the pedestrian.

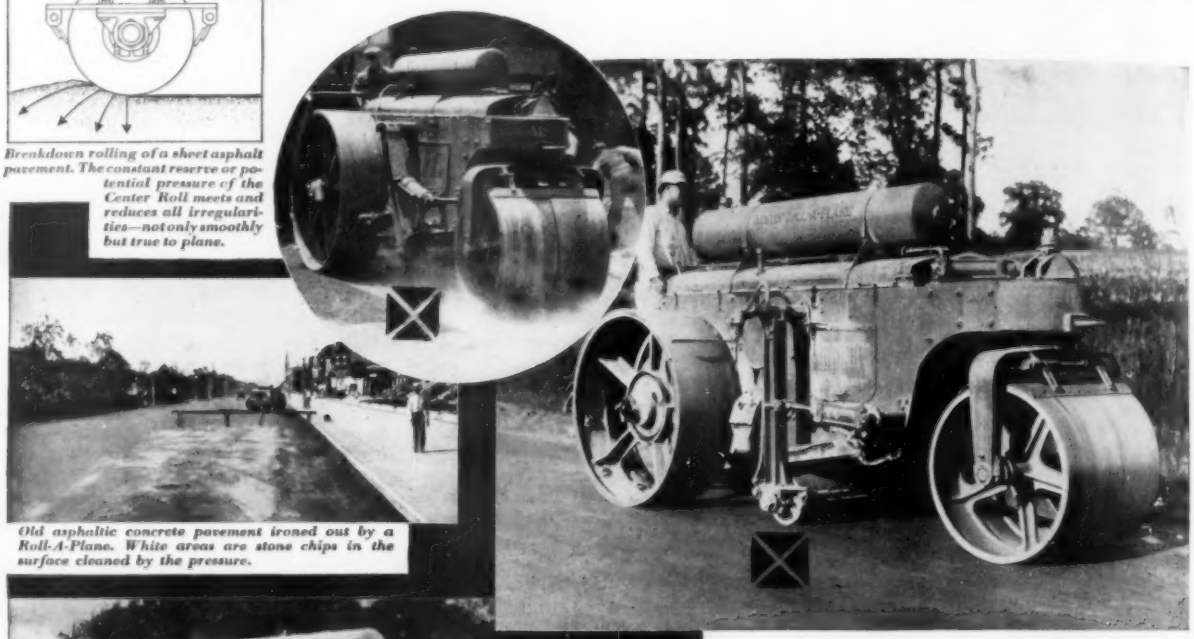
RESULTS . .

tell the spot-pressure story!



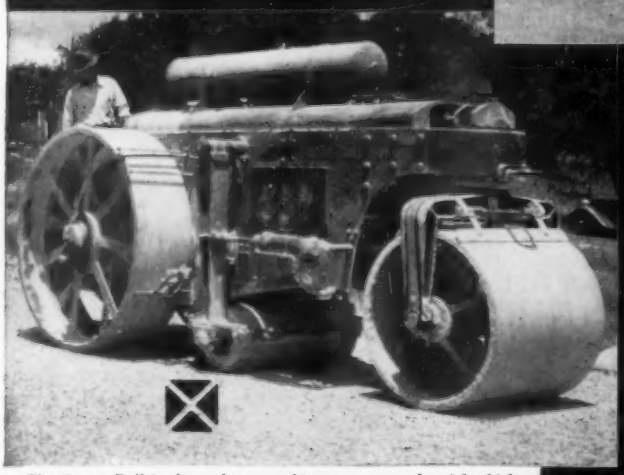
Potential Pressure of 310 to 500 lbs. per lineal inch

Breakdown rolling of a sheet asphalt pavement. The constant reserve or potential pressure of the Center Roll meets and reduces all irregularities—not only smoothly but true to plane.

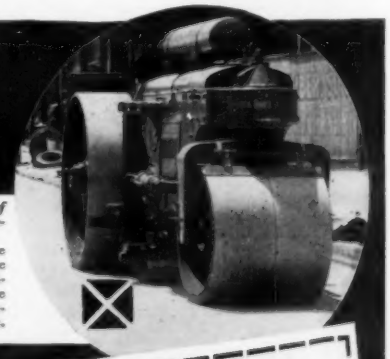


Old asphaltic concrete pavement ironed out by a Roll-A-Plane. White areas are stone chips in the surface cleaned by the pressure.

Entirely new performance from a road roller is demonstrated here in the finish rolling of a road-mix—a true plane surface without cross rolling, the remarkable result of the Center Roll principle.



The Center Roll is shown here on a bituminous macadam job which showed under final test a surface smoothness equal to the usual specifications for pavement of the highest type.



Finish rolling of sheet asphalt pavement.

Write for new 8-page bulletin describing the Roll-A-Plane principle and its remarkable record of actual performance and savings.

The Austin-Western Road Machinery Co.
A-4 Aurora, Illinois

Please send me complete engineering details on the Austin Roll-A-Plane.

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CRUSHING AND WASHING PLANTS · SWEEPERS AND SPRINKLERS · SHOVELS · CRANES · ETC · SNOW PLOWS

Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Residential Zoning District—Water Works

CALIFORNIA.—*Sunny Slope Water Co. v. City of Pasadena*, 33 Pac. 2d, 672 (Supreme Court, May 31, 1934).—The zoning ordinance placed within the most highly restricted residential zone, territory largely devoted to the growth of citrus and walnut trees and very thinly populated. Prior to the passage of the ordinance the water company had applied for a permit to drill a well in this location. The city itself was engaged in the water business, and it was claimed that it passed the ordinance, applying to this locality, so as to shut off competition.

The Court held that a commercial water well and pumping plant is commercial use, and may properly be excluded from a residential district. The motive of the city in so doing is immaterial, if the ordinance is in fact reasonable. The application for a permit before the ordinance was passed did not give the water company any vested right to its issuance. The fact that the population density was small in the district did not make the ordinance unreasonable, since in the future the district is likely to be residential.

Zoning Vacant Land—Outdoor Garage

NEW YORK.—*City of New York v. Off-Streets Parking, Inc.* (Supreme Court, Bronx County), reported in *New York Law Journal*, September 6, 1934.—"The movant [the city of New York] seeks an order enjoining the use by the defendant [Off-Streets Parking, Inc.] of vacant land as an open-air parking space, on the ground that such use is prohibited by Article 2, Sections 2 and 3, of the Building Zone Resolution [of the city of New York]. The decisions in this department [citing them] do not preclude a determination of the issue now presented. . . . These cases, as well as others, involved primarily the issuance of court act permits, and a definite ruling on the effect of the zoning as to the use of unimproved land in a residential zone was not essential to a determination. An affirmance without opinion does not necessarily approve the reasoning of the Court below [citing cases]. The question, therefore, may be regarded as an original one and open for this Court's determination.

"In view of the purposes of zoning regulations . . . it must seem that by the use of the phrase 'building or premises' therein an intention is evident to preempt the entire field of the use of land for business purposes within the prescribed areas, whether such land is vacant or improved. In general the term 'premises' is synonymous with 'land' (*Matter of Vegenas v. Kelly*, 122 Misc. 800; *Matter of Cullinan*, 113 App. Div. 485) and a zoning law to be effective should restrict business activities of any nature within the confines of the residential district [citing cases].

"Motion is granted . . . ."

NEW YORK.—*Matter of Borgeaud (Fassler, etc.)* (Supreme Court, New York County), reported in *New York Law Journal*, August 18, 1934.—This case is in accord with the case summarized above, and on substantially the same reasoning. In closing the Court says:

"The business of conducting open-air garages or parking spaces for profit is a recent innovation in city life. However desirable these parking spaces may be in a congested business district in helping to relieve street traffic, they should not be permitted to invade residential districts and depreciate the value of residential property. People who have bought homes or leased apartments in residential districts, relying upon the building zone resolution, are entitled to enjoy the use of their property or apartments free from the noise and annoyance incident to the business of an open-air garage and parking space."

Boards of Appeal—Proper Use of Discretion

NEW YORK.—*Noviak Holding Corporation v. Murdock* (Supreme Court, Queens County), reported in *New York Law Journal*, August 5, 1934.—This case, in which the facts are indicated in the brief opinion of the Court, given virtually in full below, is a good illustration of what is apparently a proper use of discretion by boards of appeals and reviewing courts in zoning matters. It is difficult to see how an equally desirable solution could have been reached by any other mechanism.

"From the testimony taken by me in this matter I am satisfied that the site in question is not suitable for the erection of a business building of any character whatever, and a gasoline selling station is the only available use to which the property in question can be put. Hence the relator should not be deprived of all use of its property or any income therefrom by reason of the Building Zone Resolution [of New York City] involved. In my opinion the respondents [the New York Board of Standards and Appeals] have improperly exercised their discretion under . . . . said resolution [in refusing to allow the erection of a gasoline selling station on the site in question]. The writ of certiorari is sustained and the decision of the respondents is reversed and annulled, and it is directed that a permit be issued for the erection of a gasoline selling station upon the property in question upon condition that when the circumstances so change by the development of the city that relator's property is reasonably susceptible of being applied to a conforming use, then, upon application of the authorities or any one interested, the gasoline selling station must be removed (see *In re Butler v. Connell et al*, 235 App. Div. 806) . . . ."

Orders of Board of Health—Variances

NEW YORK.—*People ex rel. Kranz v. Department of Health of City of New York* (Supreme Court), reported in *New York Law Journal*, June 13, 1934.—The predecessor in title of the petitioner Kranz applied for a permit to erect a poultry slaughterhouse on the premises. The Department of Health reported that there was compliance with all the requirements of the Board except that all of the property within a radius of 200 feet of the site was not in an unrestricted use district, as required by the Sanitary Code. The Board thereupon issued its permission, and the petitioner Kranz bought the premises and erected the slaughterhouse. The Board subsequently rescinded the permit, on the ground that it was issued inadvertently, and the Sanitary Code compelled it to do so. The petitioner in this action asks for a mandamus compelling the Board to revoke its action rescinding its revocation.

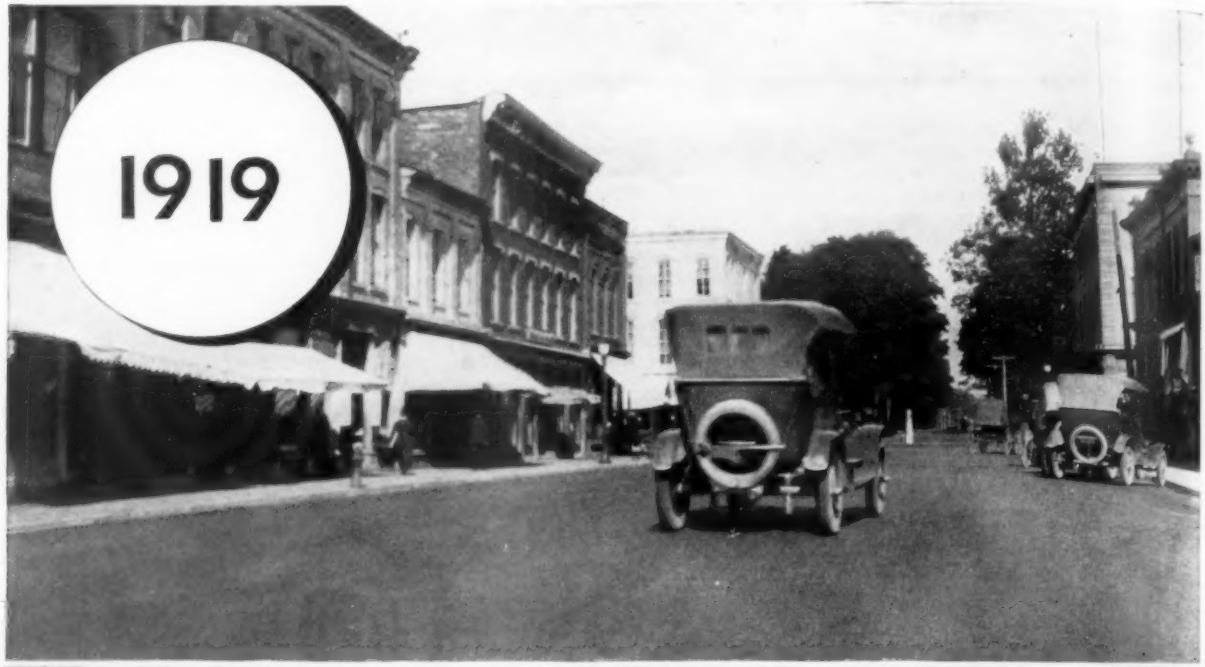
The Court grants the motion. The fact that other permits have been issued for slaughterhouses where all the land within 200 feet was not in an unrestricted district tends to show that the Board had power to vary its rules and adopt special rules. The issuance of the permit in this case was such a rule and was proper under all the circumstances.

Garage

NEW YORK.—*S. G. Tilden Inc. v. Jamaica Truck Tire Service, Inc.*, reported in *New York Law Journal*, June 14, 1934. (Supreme Court, Queens County.)—The Jamaica Co., landlord, covenanted that the premises could be used for (a) conducting the business of an automotive brake service station, the washing and lubricating of automobiles, the aligning of automobile wheels, and the sale of and installation of automobile heaters; and (b) in connection therewith, the operation of a gasoline station. The plaintiff Tilden Inc. claims that this warranty is broken because the New York City Zoning Resolution forbids in this location a "motor vehicle repair shop," which it defines as "a building . . . . wherein is conducted a general business of repairing motor vehicles."

The Court holds that the business described in the warranty was not that of a "motor vehicle repair shop"; that the business described in the warranty was not forbidden by the Zoning Resolution at that location, and that therefore the warranty was not broken.

Norfolk Street, Simcoe, Ontario, Canada. Tarvia-built in 1919. The upper photo was taken in 1921; the lower shows the condition of Norfolk Street today. The contrast in traffic conditions shows the change in urban life during the past fifteen years . . . a change made possible by good roads.



● **Tarvia roads can be built and maintained in weather that often compels suspension of work on many other types of roads. For last minute jobs, for necessary repairs and maintenance or for road-building to provide emergency work far into the winter, Tarvia provides a logical and economical answer. The cooperation of Tarvia field men places the unmatched facilities and thirty years' road-building experience of The Barrett Company at your service. 'Phone, wire or write our nearest office.**

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GOOD ROADS AT LOW COST

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Zoning—Boards of Appeals, Review of Decisions by the Courts—Front Line

WYOMING.—*Building Inspector v. McInerney*, 34 Pac. 2d, 35 (Supreme Court, June 26, 1934).—The statute authorizing the District Court to review the decisions of a city board of adjustment is constitutional.

It is claimed that in order to uphold the jurisdiction of the District Court to act as the statute directs, it is necessary to construe the acts of the board of adjustment as acts of an inferior court; that the board is simply an administrative tribunal; and that a statute which authorizes an appeal to the courts from the action of a non-judicial body is an unconstitutional invasion of the powers of such a body.

But the Board in the performance of its duties exercised both administrative and quasi-judicial duties; and the Legislature could constitutionally allow an "appeal" from its acts. It may also be noted that while the word "appeal" in its narrow sense signifies the removal of a case from an inferior to a superior court for review, more generally and broadly it may include any method of bringing before a court for judicial determination controversies of a character such as comes fairly within the court's original jurisdiction. It is in this broader sense that the word "appeal" is here used.

Appeals from decisions of boards of adjustment to the courts are somewhat informal and are not to be measured by the strict rules ordinarily applied to removal of cases on appeal from court to court. The powers of the court are broader than in an ordinary review. Note that in this instance the court in disposing of an appeal by such modification, reversal, or affirmance "as ought to be made . . . . shall have all the powers of the officer from whom the appeal is taken."

Where the entrance of the building to be constructed on a corner lot faced the street on its long instead of the short side of the lot, the "front line" was on the street which the building faced, and front, rear and side yards, under the zoning ordinance, should be fixed accordingly.

Boards of Appeals in California

On May 31 of this year Huber Earl Smutz made a valuable report to the California Planners Institute on Boards of Zoning Adjustments. It is his conclusion that without such boards, which are authorized in the legislation of most of our states empowering local communities to pass zoning ordinances, but are not provided for in California, "if the legality of zoning of our California cities is to be preserved and its popularity in others is to be maintained or increased, it is almost essential that necessary legislation be enacted to remove the power to grant zoning adjustments from the city council and vest this power in either a Board of Zoning Adjustments, a Board of Appeals, a Commissioner of Zoning Adjustments, or whatever you desire to call it, with the right of appeal to the courts for review of the board's actions."

There are minor constitutional difficulties, in Mr. Smutz's opinion, in the passing of necessary legislation to this end in California; and he includes in his paper forms of constitutional amendment necessary in California to that end.

General Hospitals for Rural Communities

AN excellent example of the resumed hospital construction program of The Commonwealth Fund (41 East 57th Street, New York) is the new community hospital now being erected in Kingsport, Tenn. Up to 1929 the Fund had assisted in the building of six small general hospitals in six rural communities which lacked adequate facilities for the care of the sick.

When Kingsport was laid out by John Nolen, a site was set apart for a hospital, and on that spot the Holston Valley Community Hospital is now rising, designed by Henry C. Pelton and James Gamble Rogers, associated architects, of New York City. The cost is being borne by the Fund and the community.

Fifty-three beds are provided. A separate residence building for nurses and other workers, with housing facilities for twenty-five people, is a feature of the original building program. The buildings are of first-class fireproof construction. It is estimated that the total cost, including site, and complete furnishings and equipment, will be about $300,000.

Under a plan developed by the Fund, wage-earners are able to make regular annual payments entitling them to hospital care when they need it. "The method of spreading costs, stabilizing hospital income, and encouraging a rational use of hospital facilities has been widely discussed during the past few years," says the last report of the Fund, "but there has been little thorough study of its relation to service standards. The Fund intends to subject any such experiment to rigorous analysis."

The policy of the Fund in promoting public health activities is to look to private physicians for cooperation in a joint effort to prevent disease and foster general health. "There is no good reason," the report continues, "why well-settled rural communities should not enjoy medical, hospital and public health services which, with the exception of certain highly specialized procedures, are on a par with urban services. Before this parity is reached, however, it is necessary to discover what units of population can economically support better services, to find ways of supplying specific lacks in in equipment and professional skill, and to educate the public to appreciate higher standards."

THE HOLSTON VALLEY COMMUNITY HOSPITAL, BEING ERECTED AT KINGSPORT, TENN.

Recent City Manager Appointments

GEORGE L. BUCK, former City Manager of Long Beach, became City Manager of San Diego, Calif., on September 1. He succeeds Fred M. Lockwood.

G. L. Opper has succeeded John J. O'Brien as City Manager of Riverside, Ill.

A. C. Nichols became City Manager of Clearwater, Fla., on August 19. He succeeded H. S. Riddle, who had been Manager there for the past six years.

Max Van de Greyn, former Manager of Roseville, Mich., on September 1 became City Manager of Harbor Springs, Mich. He succeeds Fred C. Taylor, who recently resigned to become a member of the State Planning Commission.

CLARENCE E. RIDLEY,

Executive Director, International City Managers' Association.

INTERNATIONAL HARVESTER

POWER and STAMINA
to Fight the Snow Blockade

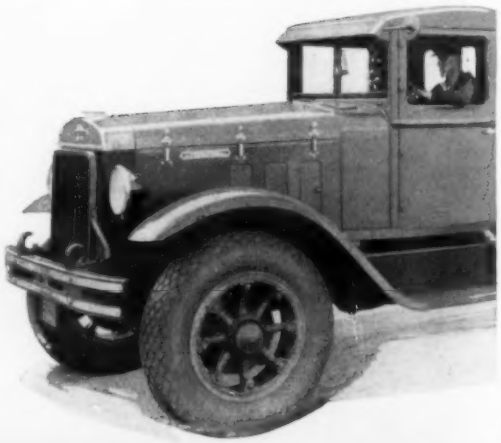
At Left: An International Model A-7 Truck cutting through the snow in upper New York state last winter.

Below: This shows the Model A-7 when its front end is out of the snow. International Truck sizes range from ½-ton to 10-ton and meet every hauling need.

● Every year more INTERNATIONAL TRUCKS and McCORMICK-DEERING TRACTORS are brought into the fight to keep the roads of the snow belt open—because they've got the power and stamina to buck the drifts twenty-four hours a day.

These big, powerful, heavy-duty trucks and crawler-type tractors are solidly built throughout. They can take the terrific punishment of this hard work. And after they have finished their winter's work, they can be used the rest of the year on other road jobs.

For complete information on International Trucks and McCormick-Deering Tractors, see our nearest branch or dealer.



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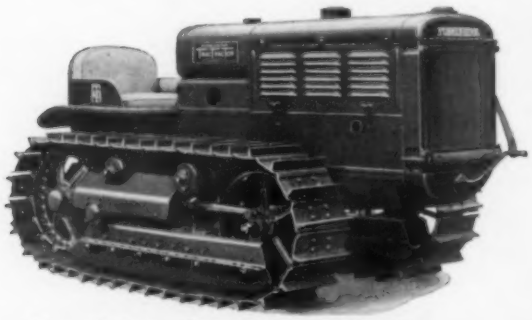

Above: The McCormick-Deering T-40 TracTracTor.
At Right: The T-40 opening a road through the mountains. The McCormick-Deering Industrial Tractor line includes the T-40 TracTracTor (gasoline or Diesel engines); the T-20 TracTracTor; four sizes of wheel tractors; and three power units, including one with Diesel engine.

Water Rates and Service Charges, Installation Charges, Hydrant Rentals and Sprinkler Costs—VI

Abstracts of Water Department and Company Reports

Coatesville, Pa.

Population	14,500
" served	17,000
Number of services	3,475
" " meters	577
" " hydrants	230
Mile of water main	29

There is a minimum charge of $3.00 per quarter to cover the cost of inspection of the meter and its reading, which entitles the consumer to 12,000 gallons of water per quarter without extra charge. The following rates apply for all water used over and above 12,000 gals. per quarter:

Excess over	12,000 gals	to	25,000 gals.	20c	per 1,000
" "	25,000 "		50,000 "	18c	" "
" "	50,000 "		100,000 "	16c	" "
" "	100,000 "		200,000 "	14c	" "
" "	200,000 "			12c	" "

Applications for service are made to the Treasurer of the city of Coatesville in writing and a ferrule charge paid. No person other than a Water Department employee is permitted to tap or make any connection to the main distributing pipe of the water works. The service pipe between the ferrule and the stop cock must be of lead and of the sizes given in the following table, which also includes the charges for inserting ferrules, or making taps, of the sizes given.

WEIGHT OF LEAD PIPE
a. a. (extra strong)

1"	¾"	⅝"	½"
4½ lbs.	3¼ lbs.	2¾ lbs.	2 lbs.

CHARGES FOR TAPS

	Inside City Limits	Outside City Limits
Price for inserting ½"...	$3.00	$5.00
" " " ¾"...	4.00	6.00
" " " ¾"...	5.00	7.00
" " " 1"...	6.00	8.00

All service pipe intended to supply two or more distinct premises or tenements must be provided with separate and distinct stop cocks for each tenement on the outside of the tenement. The city reserves the right to require any consumer of water to install a meter and to pay for such water by metered rates.

Meters are read quarterly and bills are payable on April 1, July 1, October 1 and January 1. Consumers failing to pay meter charges within 10 days after the date of bill are required to pay a 10% penality. If the bill, with the penalty, is not paid before the first day of the following month, it is the duty of the Water Commissioner to discontinue the service of water to the consumer, and when so discontinued, it is not restored until the City Treasurer certifies that the amount of the bill, together with the 10% penalty and a fee of $2.00 to cover the expense in disconnecting and restoring the service, has been paid.

There are no public hydrant rentals, but a charge of $10.00 per year is made for each private hydrant. There are no charges for connections for sprinkler systems used for fire protection except the usual minimum charge for meter reading as a check.

WILLIAM C. EMIGH,
City Engineer.

Elmira, N. Y.

Population	50,000
" served	65,000
Number of services	13,676
" " meters	13,741
" " hydrants	755
Miles of water main	150.1

Water bills are rendered quarterly in Elmira when the consumption is less than 20,000 cu. ft. per month. When the consumption is greater, the bills are rendered monthly. All services must be metered, and the minimum charge per service is $6.00 per year; 10% is allowed if bills are paid within 15 days from the date of bill, and water is turned off if the bill is not paid within 30 days.

The water rates for water used within the city limits of Elmira are as follows:

First	500	cu. ft.	30c	per 100	cu. ft.
Next	2,000	" "	25c	" "	" "
"	2,500	" "	20c	" "	" "
"	5,000	" "	15c	" "	" "
"	10,000	" "	7.5c	" "	" "
"	80,000	" "	7c	" "	" "
"	100,000	" "	6.5c	" "	" "
"	1,000,000	" "	6c	" "	" "
Balance used			5.5c	" "	" "

The meter rates for water supplied outside of the city limits are as follows:

First	500	cu. ft.	35c	per 100	cu. ft.
Next	2,000	" "	30c	" "	" "
"	2,500	" "	25c	" "	" "
"	5,000	" "	17c	" "	" "
"	10,000	" "	9c	" "	" "
"	80,000	" "	8c	" "	" "
"	100,000	" "	7.5c	" "	" "
"	1,000,000	" "	7c	" "	" "
Balance used			6.5c	" "	" "

The Elmira Water Board installs ¾" wrought iron and copper services at $30.00 for the first 40 ft. plus 50c per ft. for all over 40 ft. Larger sizes are installed at cost.

There are no charges for hydrant rentals to the city, but the towns and villages outside the corporation limits pay $50.00 per year each. There is no charge for sprinkler service. Fire lines are metered with detector meters to prevent improper use.

H. M. BEARDSLEY,
General Manager, Elmira Water Board.

North Adams, Mass.

Population	21,637
" served	21,000
Number of services	3,456
" " meters	3,350
" " hydrants	474
Mile of water main	55.1

The meter rates for which bills are issued quarterly are as follows:

First	5,000	cu. ft.	20c	per 100	cu. ft.
Next	5,000	" "	15c	" "	" "
"	10,000	" "	11c	" "	" "
"	230,000	" "	7c	" "	" "
"	250,000	" "	6c	" "	" "
Over	500,000	" "	5c	" "	" "

Applications for water service must be made in writing at the office of the Commissioner of Public Works, signed and accompanied by a deposit to the amount of the estimated cost of the service. The city furnishes and lays the service without charge from its main to the street line, except where such service is for fire protection, from which no revenue is received. Service pipes from street line to cellar will be laid by the city only at the owner's expense, and payment in full is required before water is turned on. Water meters are the property of the city unless privately owned, and are kept in repair by the Water Department when made necessary by ordinary wear and tear or by some defect in the meter itself. The consumer is charged for all repairs made necessary by his carelessness, neglect or wilful injury to the meter or by his failure to protect it from damage by frost or hot water.

There is no service charge, hydrant rental or sprinkler charge within the city of North Adams. The Williamstown Fire District is charged $30.00 per year per hydrant in that part of Williamstown supplied with water by the North Adams Water Department.

JOHN P. MILLER,
Commissioner, Department of Public Works.

Similar reports from 66 cities have appeared in The American City from May, 1934, to date and 65 reports will appear in the 1934-1935 Municipal Index.

THE NEW 5-TON GENERAL MOTORS TRUCK

$1,000 less than the average 5-ton truck

Business men with 5-ton loads to haul will want to see, inspect and learn the facts about this big, husky money-maker. They can put it to work with full assurance that it will save time and save money, day after day, year in and year out.

Priced $1000 lower than the average price of all other leading 5-ton trucks, this modern General Motors truck is truly an exceptional value. It has a GMC valve-in-head engine, of course . . . develops 94 horsepower and 230 ft. lbs. of torque. Valve seat inserts are of stellite, the carburetor is of the downdraft type, the rugged frame is 9" deep, the booster brakes have an unusually large braking area, and the brake drums are of cast nickel iron for greater economy. Add to these features a score of others, including full-floating rear axle, needle bearing universals and rugged spoksteel wheels—and the proof of this truck's overwhelming value is crystal-clear.

Whatever your hauling needs may be, there's a General Motors truck that fits exactly—one that's "engineered for the job" and therefore a more efficient worker and earner. Any GMC dealer will gladly tell you more or the facts will be mailed upon request.

GENERAL MOTORS TRUCKS and Trailers

GENERAL MOTORS TRUCK COMPANY — *Time Payments Available Through Our Own Y. M. A. C.* — PONTIAC, MICHIGAN

Port Jervis, N. Y.

Population	10,571
" served	10,500
Number of services	2,400
" " meters	50
" " hydrants	176
Miles of water main	28

The rates for metered water are based on two charges, one for water used and the other a ready-to-serve charge.

METER RATES

First 50,000 gals. per quarter..$.35 per 1,000 gals.
Next 450,000 " " " ..25 " " "
All in excess of 500,000 gals. per quarter, special rates may be fixed by the Commissioner.

READY-TO-SERVE CHARGE

For ½" and ⅝" meters per quarter	$ 1.50
" ¾" meters per quarter	2.00
" 1½" " " "	6.00
" 1" " " "	3.00
" 2" " " "	9.00
" 3" " " "	20.00
" 4" " " "	35.00
" 6" " " "	70.00
" 8" " " "	100.00

The Department of Water requires a deposit sufficient to cover the estimated cost of the installation of a service with each application for a water service connection with the city main. This deposit is applied toward the actual cost of the service installation when made, and any surplus is returned. Service pipes must be laid 5 ft. deep and must be either of lead, brass or other approved pipe from the main in the street to the stop cock set inside the curb. It is required that a bend in the form of a trap be made in the service pipe near the main, requiring at least 1 foot of extra length so as to prevent rupture by settling.

There is no charge for public fire hydrants, but private hydrants and standpipe connections carry a ready-to-serve charge of $10.00 per year. For water for sprinkling systems for fire protection, a ready-to-serve charge of not less than $25.00 per year is made.

Section XXXIII of the Regulations of the Department of Water of the City of Port Jervis contains the following unusual provision: "The Water Department reserves the right to remove meters at its option, and to charge, in place of meter rates, the regular established fixtures rates herein provided for."

HORACE A. SHELDON,
Water Commissioner.

Red Bank, N. J.

Population	12,500
" served	12,000
Number of services	3,350
" " meters	3,141
" " hydrants	221
Miles of water main	34.5

The water rate is 30c per 100 cu. ft. On the bill the Water Department makes a sewer charge of 33 1/3% of the water bill. A 5% discount is allowed if the entire bill is paid by the 15th of the month in which it is issued. A minimum charge of $2.00 per quarter is made whether any water is used or not. The meter rate applies to all water in excess of that covered by the minimum charge. No credit is allowed for the unused water of one quarter which might be used in the following quarter.

The Water Department installs all service taps and lines from the water main to the property line as follows: $20.00 for a ⅝" tap and service line; $25.00 for a ¾" tap and service line; and $35.00 for a 1" tap and service line. The charge for fire hydrants is $10.00 per hydrant per year, and there is no charge for sprinkler service, this being taken care of in the meter charges, as all sprinkler systems are metered.

RICHARD C. HACKSTAFF,
Superintendent, Red Bank Water Department.

Waynesboro, Pa.

Population	10,167
" served	11,000
Number of services	2,275
" " meters	93
" " hydrant	73
Miles of water main	35

The meter rates are divided into a minimum and meter rental charge and a charge for water used as follows:

METER RATES

First	12,000 gals. or less	30c	12,000 gals. cost	$3.60	
Next	24,000 " " "	20c	24,000 " "	4.80	
"	48,000 " " "	15c	48,000 " "	7.20	
"	120,000 " " "	10c	120,000 " "	12.00	
"	297,000 " " "	8c	297,000 " "	23.76	

All over 501,000 gals. used quarterly, 7c per 1,000 gals.

MINIMUM RATE AND METER RENTAL

Meter rental charges are made for meters in excess of one, the rentals for the first or largest size meter being included in the minimum rates. Such rental charges are payable quarterly in advance.

⅝" meter	$ 1.00	monthly minimum rate			$0.50	monthly meter rental		
¾" "	1.50	" " "			.60	" " "		
1" "	2.00	" " "			.75	" " "		
1½" "	3.00	" " "			1.00	" " "		
2" "	4.00	" " "			1.25	" " "		
3" "	8.00	" " "			1.50	" " "		
4" "	15.00	" " "			2.50	" " "		
6" "	27.50	" " "			4.00	" " "		

Service connections are made only upon written application signed by the owner of the property or by his agent and by the plumber installing the service pipe. All expense for opening and closing the trench, laying or replacing or examining service pipe, curb box and stop cock must be paid by the owner of the property supplied, or to be supplied, who must also obtain and pay for any municipal permit that may be required by ordinance. The borough furnishes the tap and corporation stop cocks for connection to the service line at a cost of $4.00 for a ¾" connection and $5.00 for a 1" connection. This includes lead gooseneck. In addition to this tapping charge, the applicant must pay the municipal charge for opening the street. The service lines consist of brass or copper pipe, of ample weight and standard quality, laid at least 3 ft. below the pavement or street surface, and it is required that it be not covered until the tap on the main is made and the service line connected and tested. A "T" handle stop cock, together with an iron extension curb box, must be placed on the service line at the curb. Where more than one family or tenant occupies the same building, as many service charges are made as there are families or tenants. Whenever water is sold by meter, the meter is furnished by the borough and remains its property. The charge for the reinstallation of meters when removed because damaged in any way for which the consumer is responsible, whether because of wilful deed or of negligence, is $2.00 for meters 1" in diameter or smaller, and $2.00 per inch or fraction thereof for meters larger than 1". This charge includes the cost of testing and must be paid in advance.

The charge for public fire hydrants is $15.00 per hydrant per year, and a similar charge is made for fire hydrants for private fire protection. Automatic sprinklers for fire protection are charged at the rate of 0.25-cent per square foot of surface of floor space protected for the first 200,000 square feet, the charge being 0.15-cent for all larger areas. Where not otherwise provided for, private fire protection and service must be through a positive meter or by a detector meter which is furnished and maintained by the borough. This meter is set in a brick, concrete or tile drained vault on the property of the consumer, who must construct and maintain it at his expense. The consumer must also at his own expense furnish, maintain and pay for all connections from the street main and install a gate valve at the curb or property line to control the entire supply. All water passing the positive meter or detector meter, owing to leakage, use or waste, must be paid for at the regular meter rates of the borough. No charge is made for water used in extinguishing fires. Where there is no sprinkler service, the following annual rates, which are payable quarterly in advance, are charged:

1" service pipe	$10.00
2" " "	25.00
3" " "	50.00
4" " "	100.00
6" " "	200.00

A. STOVER FITZ,
Borough Manager.

In the May, June, July, August and September Issues

have appeared reports in this series from Dayton, Ohio; Fort Wayne, Ind.; Jefferson City, Mo.; Milwaukee, Wis.; Mount Vernon, N. Y.; Spartanburg, S. C.; Ames, Iowa; Anniston, Ala.; Burlington, N. J.; Cedar Rapids, Iowa; Columbia, S. C.; Corvallis, Ore.; Dodge City, Kans.; Jackson, Miss.; Hanover, Pa.; Indianapolis, Ind.; Jonesboro, Ark.; Manitowoc, Wis.; New Castle, Ind.; Olympia, Wash.; Rapid City, S. Dak.; Rochester, Minn.; Salt Lake City, Utah; Washington, D. C.; Wilmington, Del.; Winona, Minn.; Wausau, Wis.; Yonkers, N. Y.; Worcester, Mass.; Ogden, Utah; Kingston, N. Y.; Keene, N. H.; Newark, N. Y.; Worcester, Mass.; Ogden, Utah; tumwa, Iowa; Pittsburgh, Pa.; Petersburg, Va.; Blytheville, Ark.; New Orleans, La.; Ashland, Wis.; Highland Park, Mich.; Youngstown, Ohio; Toledo, Ohio; Lynchburg, Va.; San Diego, Calif.; San Antonio, Texas; Greensboro, N. C.; Jacksonville, Fla.; Nashville, Tenn.; Lima, Ohio; Painesville, Ohio; Watertown, N. Y.; Allentown, Pa.; New Haven, Conn.; Taunton, Mass.; Newton, Mass.; Mamaroneck, N. Y.; Harrison, N. Y.; Poughkeepsie, N. Y.; Mt. Penn Borough, Pa.; Ripon City, Wis.; Beloit City, Wis.; Tucson, Ariz.; Milford, Conn.; Beverly, Mass.

The Simplest and Best Drainage Structure . . .

GOHI CORRUGATED PIPE

And here's all you need for installation

a pair
of hands
and a pick and shovel

GENUINE OPEN HEARTH IRON
GOHI
PURE IRON - COPPER ALLOY

Meets copper-bearing pure iron requirements in all accepted specifications for corrugated metal culverts.

THERE'S nothing involved or complicated in erecting the finest drainage structure. That's because GOHI Corrugated Pipe is adaptable, easily fitted into any drainage requirement, quickly installed and so long lived.

The illustration shows three 48-inch GOHI Corrugated Pipe under a Wisconsin Highway, where this fine looking and thoroughly practical installation replaced a small bridge which had been washed out several times.

Wherever there is a drainage problem to be licked, unusual conditions to be overcome, where traffic is heaviest, the logical drainage structure is GOHI Corrugated Pipe. It has inherent qualities to withstand the attacks of wear, weather and corrosion, to take punishment that would destroy other types of culverts, and to give trouble-free, uninterrupted service for years beyond the life of the road. Investigate GOHI Corrugated Pipe for culverts. Consult the fabricator nearest you.

GOHI CULVERT MANUFACTURERS, INC., . . . NEWPORT, KY.

Denver Steel & Iron Works Co., Denver, Colo.
Feenaughty Machinery Co., Portland, Oregon
Tennison Brothers, Texarkana, Ark.
Central Culvert Co., Ottumwa, Iowa
Bancroft & Martin Rolling Mills Co., S. Portland, Me.
St. Paul Corrugating Co., St. Paul, Minn.
Capital City Culvert Co., Madison. Wis.,
The Newport Culvert Co., Newport, Ky.
New England Bolt Co., Everett, Mass.
F. Yeager Bridge & Culvert Works, Port Huron, Mich.

Facts in Prose, and Philosophy in Rhyme

Radio Talks on Public Health Announced

WITH a series of broadcasts entitled "Doctors, Dollars, and Disease," the National Advisory Council on Radio in Education enters the field of public health. There will be nineteen programs of fifteen minutes each (10:45-11:00 Eastern Standard Time), every Monday evening, from October 2 through February 25 (excepting October 27, November 5, and November 12), over a nation-wide-network of the Columbia Broadcasting System. This series of broadcasts will consider the subject of medical economics, the cost of medical care, the relation between the medical profession and the public, and ways of reconciling the interests of the two groups.

Extension of Relief to Strikers

ON September 13 the following instructions were issued by Federal Emergency Relief Administrator Harry L. Hopkins to all state emergency relief administrations:

"The Federal Emergency Relief Administration is concerned with administering relief to the needy unemployed and their families. Each case applying for relief to the local emergency relief agencies should be treated on its merits as a relief case wholly apart from any controversy in which the wage-earner may be involved. The Federal Emergency Relief Administration will not attempt to judge the merits of labor disputes. State and Federal agencies exist, as well as courts, which are duly qualified to act as arbiters and adjusters in such disputes. Unless it be determined by the National Labor Relations Board of the National Recovery Administration that the basis for a strike is unreasonable and unjustified, the Federal Emergency Relief Administration authorizes local relief agencies to furnish to the families of striking wage-earners after careful investigation has shown that their resources are not sufficient to meet emergency needs."

Planning and Operating a Municipal Airport

CITIES that are considering the building of airports should plan them on broad, general lines, with thought for the future of air transport when the speeds will be 250 to 500 miles per hour, Robert S. Hedtler, Aviation Chairman of the American Society of Municipal Engineers, told the National Congress on Public Works and Municipal Engineering, in session at Rochester, N. Y., on September 26.

Long runways of 3,500 feet or more, for example, will not be needed in the future, because of the recent development of air brakes. Shorter runways and better airport planning to eliminate excessive taxi-ing is the present trend of airport development in this respect.

"No matter how modest may be the first construction work," said Mr. Hedtler, "the plan of the airport should be so arranged as to permit future expansion to meet the growing needs, and to obtain the highest rating possible from the Department of Air Commerce, since the higher the rating, the more the air traffic will be attracted to the port."

Choosing a site for the air field, preparing it and erecting buildings and installing proper equipment are problems which should be worked out carefully by a municipal airport committee or commission functioning under the public works or similar department of the government, he advised. Since air traffic at present is made up of various kinds—advertising, joy rides, photography, air mail and passenger transport, besides private pleasure planes, the amount of equipment and service needed at the municipal airport varies. Servicing can be a source of revenue to the city, by leasing the service rights. Other sources of revenue of the airport may include shops, recreation grounds, dog-racing tracks and similar amusement concessions.

The planning of an airport should not omit consideration of beautifying it. Cities should make their airports front-door and not back-alley entrances.

Birth and Infant Mortality Rates, 1933

THE Bureau of the Census announces that in continental United States during the calendar year 1933, there were 2,064,944 births, 120,199 deaths of infants under one year of age, and 76,837 stillbirths. These figures represent a birth rate of 16.4 per 1,000 population, an infant mortality rate of 58.2 per 1,000 live births, and a stillbirth rate of 3.7 per 100 live births. In 1932 the corresponding rates for the birth registration area, which did not then include Texas, were 17.4, 57.6, and 3.8. The birth rate for 1933 is the lowest reported since the Federal birth registration area was established in 1915, when it included only 10 states and the District of Columbia. The area has been gradually extended since then by the inclusion of other states until, with the admission of Texas in 1933, it included for the first time the entire area for the continental United States.

Infant mortality rates, which are based on the number of deaths of infants under one year of age per 1,000 live births, are excessively high in New Mexico (134.2), and Arizona (111.4)—both states with large nomadic Indian and Mexican populations which have little knowledge of infant care. The next highest rate is 78.4 for South Carolina—a southern state with a large Negro population. The lowest rates reported are those for Washington and Oregon, 38.9 and 39.3, respectively.

A tabulation of the figures for all the states and the principal municipalities in each state is obtainable from the Bureau of the Census, Department of Commerce, Washington, D. C.

Population Trend in Metropolitan Districts

THERE are seven metropolitan areas in the state of New York. The importance of the metropolitan area is no new phenomenon although its significance has been realized but recently. A study by the New York State Planning Board shows that in 1900, 66.9 per cent of the population of the state lived in these areas, and in 1930, 80.8 per cent. These areas have been growing much faster than the rest of the state; in fact, during the past thirty years over 94 per cent of the increase in population in the state has taken place in metropolitan districts. These districts did not grow as fast between 1920 and 1930 as between 1900 and 1910. The central city is not growing as rapidly as is that part of the metropolitan district outside the city. Within the metropolitan areas, the rural areas, villages and cities have been increasing in population at a much greater rate than places of the same size outside such areas.

Mary's Little Lot

By MARY C. HUDSON

Mary had a little lot—
  The soil was very poor;
But still she kept it all the same,
  And struggled to get more.

She kept the lot until one day
  The people settled down—
And where a wilderness had been
  Grew up a thriving town.

Then Mary rented out her lot—
  (She would not sell, you know)—
And waited patiently about
  For prices still to grow.

They grew, as population came,
  And Mary raised the rent.
With common food and raiment now,
  She could not be content.

She built her up a mansion fine—
  Had bric-a-brac galore—
And every time the prices rose,
  She raised the rent some more.

"What makes the lot keep Mary so?"
  The starving people cry—
"Why, Mary keeps the lot, you know,"
  The wealthy would reply.

And so each one of you might be—
  "Wealthy, refined and wise"—
If you had only *hogged* some land
  And held it for the rise.

EDITORIAL NOTE.—For this parable of Mary and her lot, THE AMERICAN CITY is indebted to C. Le Baron Goeller, of Endwell, N. Y. Mr. Goeller is unable to inform our readers who Mary C. Hudson is (or was) or when the poem first appeared. His source was a tract issued perhaps 25 years ago by A. G. Beecher, of Warren, Pa.

"The pipe is wonderful and we won't use anything else"*

The maker affirms. The user confirms. When we announced in February that Super-de Lavaud Pipe had more than *doubled impact-strength* with greater ductility and toughness, we based our statements on hundreds of tests and a year's production. Now, in October, we have a file of evidence from all parts of the country confirming those statements. *In 20 months we have made and sold over seven million feet* of Super-de Lavaud Pipe. Its outstanding feature is extraordinary resistance to damage from shocks in transportation, handling and laying. With reasonable care breakage is practically unknown. Super-de Lavaud is tougher, stronger and more ductile pipe because it is *cast without chill in a metal mold* by a patented process of centrifugal casting. Send for booklet.

UNITED STATES PIPE AND FOUNDRY CO.
BURLINGTON, N. J.
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U.S. SUPER-DE LAVAUD PIPE

IMPACT RESISTANCE INCREASED MORE THAN 100%

Do you mention THE AMERICAN CITY? Please do.

A Special Public Works Course, New York University

PROSPECTIVE city managers and city officials interested in state and municipal as well as Federal public works projects will be able, for the first time in an American Engineering School, so far as is known, to get up-to-the-minute, first-hand information on the administrative and financial phases of public works projects as well as the technological ones, in the new Public Works Option to be given as part of the curriculum of the New York University College of Engineering this year, Dean Collins P. Bliss announced recently.

Twenty prominent engineers, specialists in public works and construction, public officials, and economists will present the course, which has been planned and arranged by Dr. Thorndike Saville, Professor of Hydraulic and Sanitary Engineering at New York University, and recently appointed by Secretary of the Interior Ickes to head the national Water Resources Inquiry for the Department of the Interior. (See item in third column.)

The speakers include:

Dr. Frederick L. Bird, Director of Municipal Research, Dun and Bradstreet, Inc.

W. W. Brush, Chief Engineer, Bureau of Water Supply, Gas, and Electricity, of New York City; Chairman, National Recovery Committee, American Water Works Association.

Dr. Russell Forbes, Commissioner of Purchase, New York City.

Col. John P. Hogan, consulting engineer, member of firm of Parsons, Klapp, Brinckerhoff, and Douglass; consultant on many large power projects; Vice-Chairman, Construction Code Authority.

C. A. Holmquist, Director, Division of Sanitation, New York State Dept. of Health.

Malcolm Pirnie, consulting engineer; formerly Deputy Administrator, NRA; member, Engineering Board of Review, PWA.

Carlton S. Proctor, consulting engineer; consultant on San Francisco Bridge, Conowingo Dam, and many large structures in this country and abroad.

Charles U. Upham, Director, American Road Builders' Association; formerly Chief Engineer, North Carolina Highway Dept.; consulting highway engineer.

The new curriculum, outlined by Dr. Saville, will include: public works principles and practices; construction codes and labor problems; industrial organization; engineering economics and finance; constructors' organization and equipment.

Business men and city officials now in office, will be eligible for the course, as "auditors", and will not be required to make outside preparation for it.

Tax Assessors Form National Organization

CITY and county tax assessors now have a country-wide organization as the result of a recent meeting in Philadelphia, when the National Association of Tax Assessing Officers was formed. John C. Donehoo, City Tax Assessor of St. Petersburg, Fla., is President. Organized for the purpose of bettering tax assessment procedure in the United States, the Association plans as the first step in its program the gathering of information on all phases of assessment procedure and administration. When this material has been assembled, a manual will be published, illustrating assessing problems of all sorts, so that assessing officials may find ways of solving many perplexing "posers" met every day.

One of the objects of the new association will be to raise standards of the profession. "Tax assessing officers, performing the most important function of the revenue system, must of a necessity be well-qualified for their jobs," says President Donehoo. "In the average assessor's office more good- or ill-will can be created than in any other administrative office. The taxpayer when he obtains an audience with the assessor expects to discuss every phase of government, and the official should be in a position to answer his questions intelligently and correctly."

Seventy-five municipal tax assessors have already indicated that they will become members of the Association.

Double Shifts Urged by PWA

ON over one-third of the non-Federal PWA projects under construction double shifts of men are working, it was reported on September 16 to Public Works Administrator Harold L. Ickes by C. R. Chambers, Chief of PWA's Division of Economics and Statistics.

PWA officials in Washington and PWA state engineers have been active in encouraging contractors on non-Federal jobs to adopt the double-shift arrangement in order to give employment more quickly to more men directly on construction sites and indirectly in the industries that are supplying materials for use on construction sites. On August 23 a survey of 1,172 non-Federal projects under construction showed 462 projects were on double shift.

This double shifting was encouraged by PWA because it accelerates the recovery function of the PWA program, which is to get money into circulation as soon as possible through both direct employment on construction sites and indirect employment in industries producing materials. Two shifts of men working on a construction site within a given time will put twice as much money into circulation in the communities where they are working, and twice as much money into circulation in other communities where materials are being produced. Double shifts on construction sites call for delivery of materials twice as rapidly as single shifts would call for materials.

Under the double-shift arrangement a crew of men may start to work at 7 o'clock in the morning and work until noon, when their places are taken by a second crew which will work until 5 o'clock. Each crew thus works 30 hours a week, the maximum allowed by the public works law and by bond contracts and grant agreements written by PWA to cover allotments of loans and grants on non-Federal projects.

National Water Resources

APPOINTMENT of Thorndike Saville, Professor of Hydraulic and Sanitary Engineering at New York University, as Executive Engineer in immediate charge of the water resources investigations of the National Resources Board has been announced by Public Works Administrator Harold L. Ickes. The work is aimed at formulating plans for the orderly development over a period of years of the water resources of the country. As a first step, a comprehensive inventory of water resources will be prepared. General direction of the study will be in charge of the Mississippi Valley Committee of which Morris L. Cooke is Chairman.

The Municipal Bond Market

THE present healthy condition of the market for municipal bonds is indicated by the low interest rates now generally prevailing, as shown in the following tabulation of recent sales of new issues (from September numbers of *The Bond Buyer*). It is also indicated by the announcement of the Federal Emergency Administration of Public Works that up to the middle of last month 345 municipalities and other local public bodies have found that they can sell their bonds in the private investment market and will not need loans from PWA. Thus PWA has released $35,796,638 for reallotment to new projects.

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis(%)
$100,000	Springfield, Mass., Water	3	17.75	2.79
3,000,000	Missouri, State Building	3	5.75 Avg.	2.99
100,000	State College, Pa., Refunding	3.25	8.66 Avg.	3.13
930,000	Maryland, Special Obligation	4	3 Avg.	3.19
170,000	Coos County, N. H., Refunding	3.5	1-17 Ser.	3.32
150,000	Mercer Co., Pa., Bridge	3.5	1-30 Avg.	3.41
110,000	Schuyler Co., N. Y., Relief	3.5	1-10 Ser.	3.44
1,140,000	Montana, Anticipation Highway Treasury Debentures	4	3.25	3.61
314,000	Cranston, R. I., School Addition	3.75	15.16 Avg.	3.75
400,000	Delaware River Joint Commission, Philadelphia-Camden Bridge	4.25	20 Avg.	3.86
185,000	Springfield, Ill., Water Revenue	4	21.5 Avg.	3.87
625,000	New Mexico, Highway	4	8.5	4
250,000	Jackson Co., Mo., Parental School	4.25	20	4.12
160,000	LaPorte Co., Ind., Poor Relief	4.25	4.25 Avg.	4.22
138,000	Newport News, Va., Water Works Improvement	4	11.75 Avg.	4.22
6,000,000	Newark, N. J., Funding	4.25	1-12 Ser.	4.25
700,000	Harris Co., Texas, Road	4.5	22.25	4.29
254,000	Canton, Ohio, Refunding	4.5	8.66 Avg.	4.42
148,500	Selma, Ala., Refunding	5	16.16 Avg.	5.09

IT'S REVOLUTIONARY!

New Jenkins Water Works Valve greatly reduces number and cost of leaks . . .

This new Jenkins Gate has a stuffing box that can be tightened from the street level—no digging—no costly repaving.

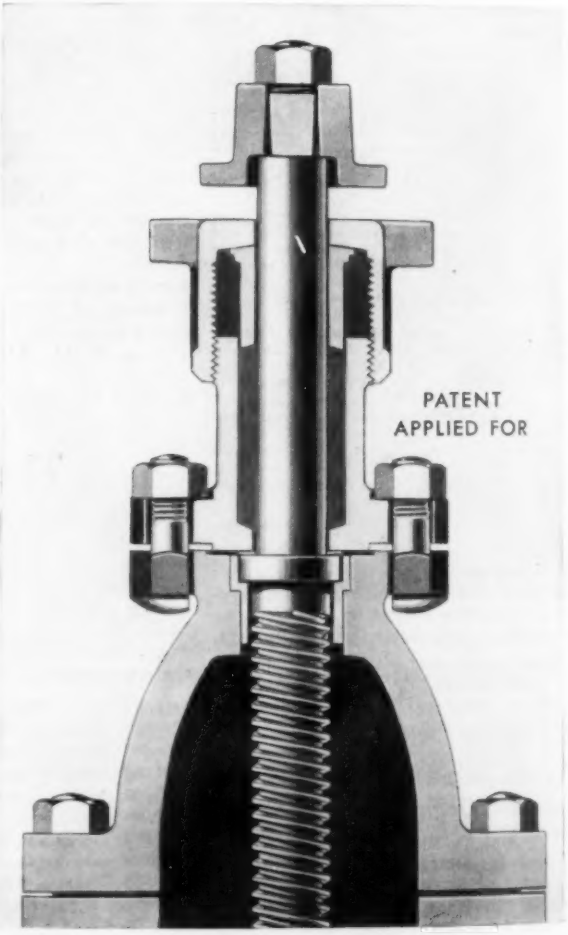
Every water valve needs occasional tightening of the stuffing box—a service that's costly in both time and dollars. One small New England city spent over $9,000 last year to make valves tight, and a major part was for the necessary digging and repaving required to reach small gate valves in order to tighten the stuffing box nuts with a wrench.

Jenkins' new design stuffing box for Water Works Gates has this revolutionary feature—it is "Key Operated" and may be serviced and tightened quickly, easily, *and without resort to digging*. This encourages more frequent inspection and tightening, which tends to cut down water losses.

To prevent corrosion troubles the entire stuffing box assembly is of bronze—another exclusive Jenkins feature. The stuffing box is unusually deep and contains a greater bulk of packing than any other valve—so it is easily made tight and stays tight much longer without repacking.

We urge you to write for full details about this new Jenkins Fig. 885 Gate. We shall also be glad to show you how the superior stuffing box assembly can be used to modernize regular Jenkins Gates now in service.

JENKINS BROS., 80 White St., New York, N. Y.; 510 Main St., Bridgeport, Conn.; 524 Atlantic Ave., Boston, Mass.; 133 N. Seventh St., Philadelphia, Pa.; 822 Washington Blvd., Chicago, Illinois; JENKINS BROS., Ltd., Montreal, Canada; London, England.



NOTE: Except for above section, the Fig. 885 is identical with standard Jenkins Fig. 327 Solid Wedge or Fig. 883 Double Disc Valves.

Jenkins Valves

BRONZE — IRON — STEEL SINCE 1864

When you write for that catalog, kindly mention THE AMERICAN CITY

THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for injury caused when automobile struck unlighted pile of crushed rock in street (Missouri Supreme Court: *Plater v. Kansas City*, 68 S. W. 2d, 800).

City held liable for injury to pedestrian due to defective condition of loose brick sidewalk (Oklahoma Supreme Court: *City of Enid v. Smith*, 29 Pac. 2d, 765).

Local law assuming municipal liability for injury to bystanders by police officers in attempting to arrest another upheld (New York Court of Appeals: *Evans v. Berry*, 186 N. E. 203).

City held liable for injury to woman alighting from street car into hole in street (Pennsylvania Superior Court: *Murtha v. City of Philadelphia*, 171 Atl. 399).

City held liable for injury to pedestrian who stepped into depression in gutter, although she violated ordinance requiring pedestrians to cross streets at intersections (Alabama Supreme Court: *City of Birmingham v. Blood*, 153 So. 430). To same general effect, see *City Council of Augusta v. Brassell*, 173 S. E. 440, decided by Georgia Court of Appeals.

Motorist falling into improperly covered storm sewer on alighting from car held not barred from recovering damages because car was parked too near fire hydrant or street intersection (Alabama Supreme Court: *City of Birmingham v. Martin*, 153 So. 235).

Bond Issues

Statute permitting municipalities to fix earliest maturity of bond installment five years after earliest possible maturity date held valid exception to provisions of Uniform Bond Act (Ohio Supreme Court: *State ex rel. City of Columbus v. Ketterer*, 189 N. E. 252).

Bonds held issuable at face value in payment of contract price of water system (Montana Supreme Court: *Commonwealth Public Service Co. v. City of Deer Lodge*, 29 Pac. 2d, 667).

Civil Service

Restored patrolmen held entitled to pay for period of suspension (Pennsylvania Supreme Court: *Haslam v. City of Philadelphia*, 171 Atl. 563).

Applicant held not such clear right to selection as policeman as to entitle him to mandamus to compel submission of his name to Council (Montana Supreme Court: *State v. Mayor of City of Butte*, 30 Pac. 2d, 819).

Policemen and firemen wrongfully removed held entitled to pay where vacancies were not filled (Kentucky Court of Appeals: *Singery v. City of Paducah*, 68 S. W. 2d, 770).

Public safety commissioner, not fire chief, held "head of department" empowered to suspend fire department employee (Washington Supreme Court: *Larson v. Civil Service Commission, City of Everett*, 28 Pac. 2d, 289).

Policemen's discharge for inefficiency held improper for want of proper action by Civil Service Board (Texas Court of Appeals: *McDonald v. City of Dallas*, 69 S. W. 2d, 175).

Borough President held empowered to shift employee to lower position within classified grade, no removal from office or change of grade being involved (New York Court of Appeals: *Thoma v. City of New York*, 189 N. E. 470).

Contracts

Ordinance requiring notice to corporation counsel held mandatory condition precedent to suit on contractor's bond (New York Supreme Court, Appellate Division; *E. J. Eddy, Inc., v. Fidelity & Deposit Co. of Maryland*, 269 N. Y. Supp. 24).

City held to have ratified Commissioner's verbal modification of river-straightening contract (Illinois Supreme Court: *Great Lakes Dredge & Dock Co. v. City of Chicago*, 188 N. E. 196).

City paying retained fund to contractor's assignee held potentially liable to contractor's surety on assignee misapplying fund (United States Circuit Court of Appeals, Fifth Circuit: *Republic National Bank & Trust Co. v. Massachusetts Bonding & Insurance Co.*, 68 Fed. 2d, 445).

Contract to pay City Attorney for compiling city code held violative of statute forbidding officials' private interest in contracts (Georgia Court of Appeals: *Doyal v. City of Rome*, 173 S. E. 214).

On abandonment of work by contractor city held entitled to deduct extra engineering expense entailed by non-completion of work within contract time, contractor's surety finishing job (United States Circuit Court of Appeals, Second Circuit: *Maryland Casualty Co. v. Board of Water Commissioners, City of Dunkirk*, 66 Fed. 2d, 730).

Engineering Services

Employment of street improvement engineer held valid entitling him to compensation for services, although improvement was abandoned (California Supreme Court: *Brooks v. City of Gilroy*, 29 Pac. 2d, 212).

Finances

Owners claiming their property was not legally annexed to town held without right to appeal from writ compelling tax levy to pay town bonds (United States Circuit Court of Appeals, Fifth Circuit: *Normandy Beach Development Co. v. United States*, 69 Fed. 2d, 105).

Licenses

Liquor licenses held terminable by state though issued by municipality. Holder of license held entitled to recover pro rata and unearned part of fee involuntarily paid (New York City Municipal Court, Borough of Queens: *Gubin v. City of New York*, 269 N. Y. Supp. 46).

Employer held not entitled to enjoin enforcement of ordinance requiring employees to secure license to peddle (Iowa Supreme Court: *Cook v. Davis*, 252 N. W. 754).

Peddlers' $50 annual license tax imposed by village held not excessive (New York Supreme Court, Rockland County: *Dugan Bros. v. Dunnery*, 269 N. Y. Supp. 844).

Occupation tax ordinance held not repealed by implication by amendatory ordinance (Arkansas Supreme Court: *City of Helena v. Russwurm*, 68 S. W. 2d, 1009).

Wholesaler of non-intoxicating malt liquor, licensed where he maintains his place of business, held entitled to sell to retailers in other municipalities without further license, under Minnesota law (Minnesota Supreme Court: *Bernick v. City of Little Falls*, 253 N. W. 369).

Attempt to levy license tax on out-of-town wholesalers making sales and deliveries to retailers in town held void (Florida Supreme Court: *Duffin v. Tucker*, 153 So. 298).

Ballot on operation of light plant held invalid for failing to indicate method of financing (Iowa Supreme Court: *Pennington v. Fairbanks, Morse & Co.*, 253 N. W. 60).

Installation of equipment in light and water plant, to replace obsolete equipment, held not to require electoral assent (Indiana Supreme Court: *Indiana Service Corporation v. Town of Warren*, 189 N. E. 523).

Contract to pay for light plant out of revenues without referendum held invalid (Texas Commission of Appeals: McCann v. Akard, 68 S. W. 2d. 1033).

Officials' Liability

Building Inspector held not liable for illegally permitting adjoining owner to build too close to plaintiff's property line, and Mayor and his surety held not liable for failing to exact bond from Inspector (Utah Supreme Court: *Jones v. Barrett*, 30 Pac. 2d, 273).

Water

Contract to furnish free water service to county courthouse and jail held invalid and not binding on subsequent administration. (Georgia Supreme Court: *City Council of Augusta v. Richmond County*, 173 S. E. 140).

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MUNICIPAL AND CIVIC PUBLICATIONS

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Rehousing

Slum Clearance and Rehousing—The First Report of the Council for Research on Housing Construction, Artillery House, London, S.W.1. Published for the Council by P. S. King & Son, Ltd., 14 Great Smith Street, Westminster, London, 1934. 140 quarto pp. Many photographs and drawings. 10s. 6d. net.

This report attempts to apply the best and most recent constructional technique to the reduction of building costs in urban rehousing. It makes clear that the redevelopment of slum areas demands the simultaneous redevelopment of large areas of adjoining property, to insure enough cleared land for economic building operations and the prevention of new slum areas. Accurate research into every aspect of the situation is demanded in order to know the total present and future housing needs and the essential load on building finance and labor.

Preliminary to the detailed attack on the economic and technical difficulties, interesting and important information is given. A statement of the origin and the status of the Council as a body of individuals experienced in the housing field and desirous of meeting the nation's housing needs precedes an outline of the Council's program and organization of work. Post-war conditions are reviewed, and the Government's attempts and achievements in relief of the acute housing shortage. The 1930 Housing Act is explained, as the basis of the Government's rehousing policy, and progress in carrying out this policy is recounted, leading to the recognition of the imperative need of extensive new measures for the abatement of overcrowding.

Groups of photographs contrast slums and new housing in tenement flats in large cities in Great Britain and on the Continent. Many drawings present model designs for standardized tenement flats, illustrating the text. The Economic Analysis and the chapter on Design and Construction of Tenements present to town planners, construction engineers, architects, builders, and housing administrators the challenge of practical possibilities.

City Planning

The Design of Residential Areas—Basic Considerations, Principles, and Methods.—By Thomas Adams. Published by the Harvard University Press as Volume VI of the Harvard City Planning Studies. 1934. 296 + XIII pages. Many illustrations. $3.50.

This new volume is a contribution of outstanding importance to the literature of city planning in general, and of low-cost housing and slum clearance in particular. In it Mr. Adams discusses the origin and effects of blighted districts, stresses the fundamental need for comprehensive planning, and suggests practical technique to achieve the most economical and healthful living conditions for the average income group.

The monograph consists of two parts: the first, dealing with basic considerations which affect developments of land for housing in all urban areas; the second, dealing with broad principles and methods of design, and with some practical examples of community and neighborhood planning.

Land policies and land prices are given special consideration. Certain important recommendations by Mr. Adams will be discussed by the editor of THE AMERICAN CITY in a paper on "Possible Modifications of Urban Land Policies in America," to be presented at the annual meeting of the American City Planning Institute, in St. Louis, October 21.

Housing

The report of the Philadelphia Housing Association for 1933 appears in a 40-page illustrated pamphlet entitled "Housing in Philadelphia," prepared by Bernard J. Newman, Managing Director and Secretary of the Association. The information is presented under the following heads: Can We Afford Not to Build?; Housing Projects; Dwelling Construction—Zoning; Demolitions; Sheriff Sales; Rent Study; Insanitation. 25c. (Apply to the Association, 1600 Walnut St., Philadelphia, Pa.)

Highways

Highway Design and Construction.—By Arthur G. Bruce, Senior Highway Engineer, U. S. Bureau of Public Roads. International Textbook Co., Scranton, Pa., 1934. 628 pp. $4.00.

A textbook, the original outline and material for which was prepared from a consideration and analysis of the requirements of engineering practice rather than from an investigation of college courses or existing texts on the subject. Its 28 chapters span the broad field of highway administration and location, the design of roads, grading, drainage, soil studies, materials for low-cost roads, natural subgrade treatment and untreated surfacings, bituminous surface treatments, road-mixed and plant-mixed bituminous surfaces, bituminous-macadam roads, cement-bound macadam, portland-cement concrete, base courses for pavements, hot-mix and rock-asphalt pavements, cold-laid bituminous pavements, maintenance of bituminous pavements, brick pavements, miscellaneous block pavements, sidewalks, curbs and gutters, guard-rails, signs and markers, highway beautification and lighting, estimates, contracts and specifications, comparison of costs of various surfaces, street cleaning and snow removal, and landing fields and runways for airports.

Slum Clearance

Maps and Charts Prepared by the Slum Clearance Committee of New York, 1933-34.—137 large pages, plus foreword and appendices. R. H. Shreve, Director, 11 East 44th Street, New York. $5.00.

This imposing volume contains reproductions of 243 research and study maps and charts, including those prepared by the Slum Clearance Committee as a factual basis for the New York City Housing Authority's program, and certain maps and charts of the Land Utilization Committee of the New York Building Congress. The studies deal with 14 areas in Manhattan and Brooklyn in which housing conditions seemed to require special investigation.

The social factor study covered health conditions; population density and trends; absentee landlordism, crime incidence and delinquency; public safety as revealed by fire and street accident records; availability of relief and welfare agencies, and records of charity organizations.

The study also dealt with the physical and economic conditions of the areas, and the disproportionately high expense to the city of providing municipal services as compared with the income from taxes, the cost of policing, fire protection, street maintenance, sanitation and other health services, and the tax reductions over a period of years.

As a basis for the study of new housing possibilities, land costs were studied, together with the possibility of improving the city plan by the better use of these areas, the presence of sufficient cheap transportation, what industries were available for the employment of dwellers in the districts, and the relation of present and future main traffic arteries to the districts.

Michigan Utilities

"Municipal Electric Utilities in Michigan" in 116 pages furnishes for the first time an accurate descriptive list of these facilities and of the mighty significant and usable data concerning their management, operation, costs and rates, equipment and condition. Bulletin R-4 is issued for $2.25 by the Michigan Municipal League, Donald M. Whitesell, author, and its purpose is to furnish information that can be used in improving these utilities. As Director Harold D. Smith of the League says: "The report should serve to answer the questions and solve some of the problems of local officials administering municipal electric facilities, who are on the whole too busy with their individual duties to make this type of research preparatory to their own study, and should present also a complete and truly unvarnished picture of good, bad and indifferent practices of management and operation to officials of communities contemplating municipal ownership."

Public Health

Papers of Charles V. Chapin, M.D.: A Review of Public Health Realities. Selected by Frederic P. Gorham, A.M., Sc.D.; edited by Clarence L. Scamman, M.D. Foreword by Haven Emerson, M.D. Published by The Commonwealth Fund, New York. 1934. XXIV + 244 pp. $1.50.

Dr. Chapin was Superintendent of Health in Providence, R. I., for 48 years, and has served as lecturer in university work in public health, as hospital consultant, and in other parts of the great field to which his life is given. His distinguished service and counsel are so well known that the mere listing of the titles of his papers contained in this volume should insure its being sought for reading as an interpretation of the modern movement in public health: Part I, *Public Health Administration*—Pleasures and Hopes of the Health Officer; Truth in Publicity; Dirt, Disease, and the Health Officer; How Shall We Spend the Health Appropriation?; Effective Lines of Health Work; Science and Public Health. Part II, *The Control of Communicable Disease*—The Fetich of Disinfection; Justifiable Measures for the Prevention of the Spread of Infectious Diseases; Disinfection in American Cities; Studies in Air and Contact Infection at the Providence City Hospital; Isolation, Its Value and Limitations. Part III, *Epidemiology and Vital Statistics*—The Need of Quantitative Methods in Epidemiological Work; Changes in Type of Contagious Disease, with Special Reference to Smallpox and Scarlet Fever; The Principles of Epidemiology; The Value of Human Life; Deaths Among Taxpayers, Income Tax, Providence, 1865.

Taxation

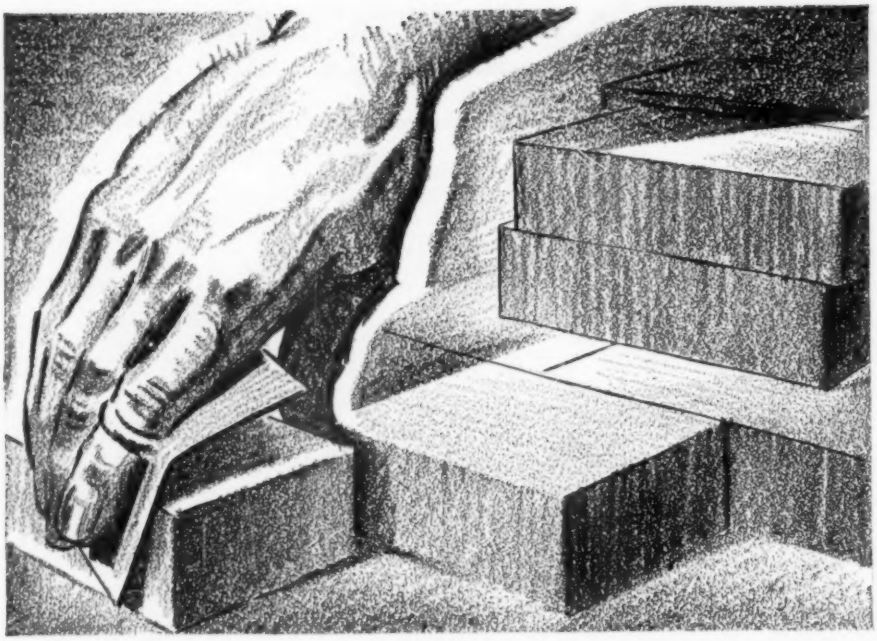
The Sales Tax in the American States.—By Robert Murray Haig, Carl Shoup and staff associates. Columbia University Press, New York. 1934. 833 pp. $4.50.

The results of extensive field investigation are embodied in this volume. The undertaking was financed by the Rockefeller Foundation and was carried out by Professor Carl Shoup assisted by a staff of economists, and working under the direction of Professor Robert Murray Haig of Columbia University. The study covers the financial situation of the various states in which vigorous sales tax campaigns have been conducted, and devotes particular attention to the groups advocating or opposing the levy. There are also chapters on the reaction of taxpayers to the sales tax, legal problems in state sales taxation, and the administration of the tax. In evaluating the levy as a state fiscal measure Professor Shoup declares: "In the writer's opinion, the sales tax as an emergency form of revenue, and certainly as a permanent part of any state's tax system, marks an unnecessary and backward step in taxation."

Civic Service

American Civic Annual: A Record of Recent Civic Advance, with a List of Who's Who in Civic Achievement Among the Members of the American Civic Association.—Edited by Harlean James, Executive Secretary, American Civic Association. Vol. V. Published by American Civic Association, Inc., Union Trust Building, Washington, D. C. 1934. XII + 278 pp. Illustrated. $3.00.

Progress in the broad field of civic service is again presented in this Annual, in articles by authorities in the various divisions: The Nation—Land Planning, National Parks, National Forests, Federal City, Housing; Regional Planning—Significant Districts, County Planning, A Regional Recreational Center (Oglebay Park, Wheeling, W. Va.), New Regional Highway; In the States—State Planning, Highway Planning and Roadside Development, State Parks and Recreation, Two State Capitals (Jefferson City, Mo., Santa Fe, N. Mex.); and In the Cities and Towns. The information is up to date and most attractively set forth and illustrated. The appearance of this distinctive record is eagerly anticipated each year; it has the charm of excellence and authenticity.



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Taxation

Tax Systems of the World, Fifth Edition, 1934. *Prepared under the direction of the New York State Tax Commission, Mark Graves, President; John J. Merrill, and John P. Hennessey. Published by Commerce Clearing House, Inc.*, 205 West Monroe Street, Chicago, Ill. 282 pp. 8¾ x 12¾. $10.00.

The customary usefulness of this yearbook is very much increased this year by the addition of ten charts and comparative tax tables for countries other than the United States, similar to the ones which have been appearing in previous volumes (and which are continued in the present edition) of the United States and the various states and territories. Another interesting new section contains data on the tax revenues of 63 counties. A model American Federal, state and local tax system, as outlined by Prof. Paul Haensel of Northwestern University, is contained in the following pages.

For the person seriously interested in taxation, whether he be administrator, research worker, college professor, or business man, the yearbook is invaluable. Here at a glance may be obtained comparative tax information which could not otherwise be secured without laborious and intensive investigation. Two hundred of the most eminent tax authorities of the world have collaborated in this undertaking. The result is a veritable mine of information on the subject of public finance.

Slum Clearance and Housing

During 1933 the Chicago Plan Commission conducted a series of studies on the rehabilitation of blighted districts, slum clearance and low-cost housing. In its report for that year the Commission presents the findings secured from the analysis of conditions in the large section of Chicago studied, in which 169,000 families were living at the lowest economic levels. The data were chartered on 16 maps, too large for reproduction in this 32-page pamphlet, but offered for consultation at the Plan Commission's headquarters. Summaries of the data for each map are given in Part One of the pamphlet. Part Two summarizes the acts in relation to housing and Housing Authorities, and amendments thereto. (Apply to the Chicago Plan Commission, 208 W. Washington St., Chicago, Ill.)

The City Council of Portland, Ore., adopted a Housing Code on March 20, 1934, prepared by Ormond R. Bean, City Commissioner, and presented in a volume of 108 mimeographed sheets besides 24 pages of indexing. Many tables and diagrams are inserted, to facilitate the use of these flexible and rather complicated regulations. Amendments passed by the Council July 26, 1934, are included with the Code. The study on which the new Code is based covered the housing regulations of many cities, and the actual construction conditions in Portland. The Code "should be considered and used as a progress solution of a difficult problem," and it is intended to be subject to revision as its weaknesses may develop in the effort to meet modern conditions. (Apply to H. E. Plummer, Inspector of Building, Department of Public Works, Portland, Ore.)

Planning

The September 24, 1934, Information Bulletin (No. 20) of the Regional Plan Association tells of "Work-Relief Projects Advancing in City, State and Nation." A "planning project" on a work-relief basis is explained, and the need for such gathering and presentation of facts about the physical development of a community is made plain, and the resulting benefits. The principles of organizing the projects are briefly stated, and prompt action is urged. Much information is given about progress in the various fields of planning, including a map of local planning boards throughout the United States. (Apply to Regional Plan Association, Inc., 400 Madison Ave., New York.)

Ordinances

A typewritten list of references to "Ordinances Introduced in or Passed by the City Councils of Large Cities," dated September 20, 1934, may be borrowed for copying from the Municipal Reference Library, 1005 City Hall, Chicago, Ill. 6 sheets. (Apply to the Library.)

Road Construction

The Asphalt Institute has recently issued 9 pamphlets containing its construction specifications for the following asphalt road types: (A-1) Asphalt Macadam Surface Course; (A-2) Asphaltic Concrete Surface Course; (A-3) Stone-Filled Sheet Asphalt Surface Course; (A-4) Sheet Asphalt Binder and Surface Course; (B-7) Asphalt Macadam Base; (B-8) Asphaltic Concrete Base; (S-1) Asphalt Surface Treatment or Retreatment of Old Bituminous Surface; (RM-1) Asphaltic Road-Mix Surface Course (Macadam Aggregate); (RM-2) Asphalt Road-Mix Surface Course (Dense Graded Aggregate). These specifications, as they relate to surface treatment and road-mix types, show in detail the best low-cost road construction practices as previously covered broadly in the Institute's Road Construction Manuals. The hot-mix and penetration types are recent revisions of earlier Asphalt Institute specifications with more detailed requirements covering improved equipment. (Apply to The Asphalt Institute, 801 Second Ave., New York.)

The Asphalt Institute has issued Manual Number One on Road-Mix Types (third edition revised) in the series on Asphalt Road Construction. 1934. Handy size. 63 pp. Illustrated. (Apply to the Institute, 801 Second Ave., New York.)

Traffic

"Drunken Driving Laws and Their Operation" is the title of a 16-page pamphlet issued by the American Automobile Association, presenting Part I of a study covering the following ground: Part I, An Analysis of Penalties Which May Be Imposed in the Various States—And a Discussion of Existing Laws on This Subject; Part II, A Study of Arrests, Convictions and Sentences Under Existing Laws; Part III, An Analysis of the Problem of Securing and Presenting Evidence to Obtain Convictions of Intoxicated Drivers; Part IV, Conclusions and Recommendations Based upon These Studies, with a view of Securing More Adequate Legislation and Stricter Enforcement if the Necessity for Improvement Is Indicated. Three tables analyze fines, and optional and mandatory jail sentences. (Apply to the Association, Pennsylvania Ave. at 17th St., Washington, D. C.)

Mosquitoes

The Extension Service of the University of Maryland (College Park, Md.) has issued what might be called a stirring report on "Anti-Mosquito Work in Maryland, so direct is its text, so telling its illustrations. Much CWA work has been done in Maryland in this field—much remains to be done. The work was carried on in ten areas in the state under the Federal Pest Mosquito Project. Just how it was done, and what the various species of mosquitoes look like and how they act is made vivid. 32 pp. (Apply to T. B. Symons, Director, Cooperative Extension Work in Agriculture and Home Economics, at the University.)

Appraisals

Boeckh's "Manual of Appraisals" has just been published, and is of special value to builders, architects and engineers in the determining of building estimates as part of the general field of building and land appraisals. It has been prepared by E. H. Boeckh, of E. H. Boeckh & Associates, appraisal engineers. Definitions of appraisal requirements are first given, with specific plans to use under various conditions, followed by general instructions for appraisal procedure in field and office. A tabulation of cubic-foot costs for 97 types of buildings is then given, subdivided into classes of construction and size—more than 3,300 individual cubic-foot costs, with corrective factors for thousands of deviations from standards. These Manual base prices are corrected to the fluctuating local prices by means of local index numbers, which are furnished subscribers at a nominal fee whenever requested. A pad of appraisal report work sheets is supplied with the book, also a request blank and a bulletin of comparative building cost index numbers for ten types of construction in leading cities. 271 pp., photographs, diagrams, tables. $5.00. (Apply to the publishers, The Rough Notes Co., Inc., Indianapolis, Ind.)

Water Supply

The chemical composition of the public water supplies of 670 places, which serve 56,000,000 consumers, is shown in a 98-page table in Water-Supply Paper 658 of the Geological Survey, United States Department of the Interior, recently issued. The supply systems are described briefly in the table as to source and treatment. The accompanying text carries a brief discussion of the treatment of public, industrial, and domestic supplies, without reference to questions relating to sanitation and health. The data for the individual supplies are summarized in several smaller tables, especially with reference to hardness. A map indicates the weighted average hardness by states of the supplies for which analyses are given. 15c. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

Fire Protection

The report on "City Planning and Zoning in Relation to Fire Prevention and Fire Protection," adopted in 1934 by the National Fire Protection Association, on recommendation of the Committee on City Planning and Zoning, has been published in an illustrated pamphlet of 39 pages. After a discussion of the principles, history and laws of city planning and zoning, the relation of city planning to fire defense is discussed under streets, highways, boulevards and parks; fire-resistive and sprinkler-equipped buildings; civic centers and central fire alarm stations; fire stations; regional planning—water supply, telephone service, intermunicipal fire protection; overhead wires; blighted areas; bridges; waterfronts; street names, house numbers, fire-alarm box distribution. Zoning in relation to fire defense is discussed under business in residential districts; apartment houses; building heights and setbacks; building areas. There are chapters on: The Cost of City Planning and Zoning; The Challenge to City Planners and Fire Protection Engineers; and Contacts between City Planning and Zoning and Fire Protection authorities. A brief bibliography is given, and a statement of court decisions in this field, in various states. (Apply to National Fire Protection Association, 60 Batterymarch St., Boston, Mass.)

Public Welfare

The American Public Welfare Association has made a study of "Medical Care for the Unemployed and Their Families Under the Plan of the Federal Emergency Relief Administration," the data for which were compiled by Miriam Simons Leuck and are made available in a 28-page pamphlet. A successful organization of medical aid systems under FERA is reported by 29 of the 48 states surveyed by the Association in cooperation with the Rosenwald Fund. The first year's experience has helped to make communities realize that they are responsible for medical aid to their poor, and that they cannot expect it from physicians for nothing; also, that to be successful, the medical aid program must have effective supervision and control of costs, and provision for hospitalization, special services and better care of chronic cases. (Apply to the Association, 850 E. 58th St., Chicago, Ill.)

Water Supply

"Do Private Wells Save Money?" is a treatise prepared by John A. Bruhn, Homer Rupard, and Neil Kershaw, members of the Indianapolis Water Co.'s organization, and presented at the annual meeting of the Indiana Section of the American Water Works Association, held at Purdue University last April. It appears in a 20-page pamphlet in which the subject of private versus public water supplies is discussed in its various aspects, with the conclusion: "If after making intelligent comparisons between the seeming economies of a private well and the public supply the comparison appears favorable to the well, there still remain the vital questions of safety, dependability and adequacy. When these important factors are given proper weight, the decision in most cases will be in favor of the public supply."

Recreation

The history and present organization of municipal recreation in Philadelphia is set forth in a mimeographed report of 14 pp., available from the Bureau of Recreation Office, 432 City Hall Annex, Philadelphia, Pa.

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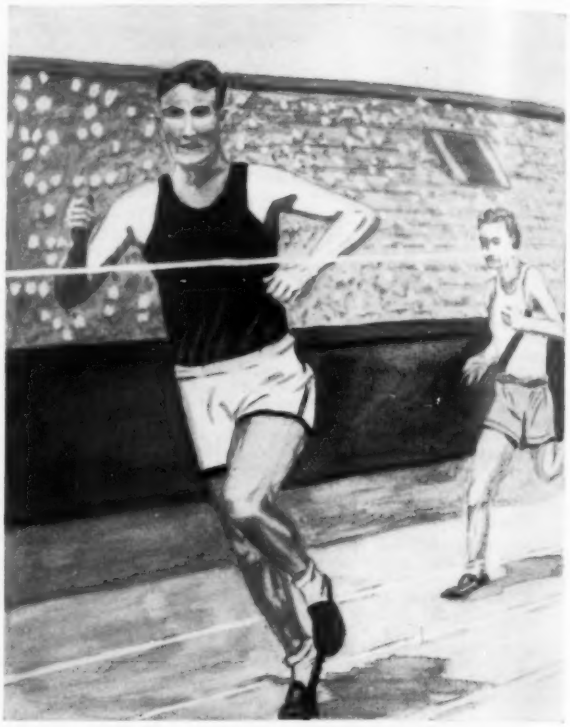

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Taxation

"City Sharing in Special Motor Taxes" is the title of Report No. 98 of the American Municipal Association and Report No. 73 of the United State Conference of Mayors, issued August, 1934. It has been prepared by the American Municipal Association and is presented in a pamphlet of 37 quarto photo offset pages. It brings up to date the data in a report of the Association issued two years ago on "State Administered Municipally Shared Gasoline Taxes," and includes also registration taxes. It analyzes, state by state, the present law and practice in this matter; and in Part II, "Where the Cities Stand," it covers: Generally Accepted Principles; The Present Status; Suggested Cities' Program; Cities Entitled to Half of Contribution; Trend in Recent Federal Legislation; Relation to Whole Fiscal Problem. A brief bibliography on registration and gasoline taxes is given. $1.00. (Apply to American Municipal Association, 850 E. 58th St., Chicago, Ill.)

Automobiles

The 1934 edition of "Automobile Facts and Figures," published by the National Automobile Chamber of Commerce, give the figures for the calendar year 1933. Many tables and charts display the striking story of recovery in the automobile industry. It is stated that sales in the domestic market increased 39 per cent, sales of American motor vehicles in foreign markets gained 34 per cent, and production climbed 38 per cent over the preceding year; and that the first five months of 1934 continued the improvement. Employment in the industry in May, 1934, approximated 1929 levels, with hourly wage rates exceeding the highest 1929 rates. "Over 900,000 persons are working directly and indirectly on Federal aid and state roads, not including workers on local highways." (Apply to the National Automobile Chamber of Commerce, 366 Madison Ave., New York.)

Sanitation

"Co-Functions of Traps and Vents in Plumbing" is a pamphlet of 12 quarto pages, presenting a study by Walter S. L. Cleverdon, Associate Professor of Sanitary Engineering, New York University, and is No. 1 of the 1934-5 publication of the College of Engineering of the University. It is reprinted from the *Plumbing and Heating Trade Journal* of February and March, 1934, by courtesy of Jere L. Murphy, of New York. A report is made of extensive experiments to determine how much atmospheric pressure must be reduced to siphon a trap, and under what conditions of venting this pressure reduction in the soil or the drainage lines would take place. (Apply to the College of Engineering, New York University, University Heights, New York City.)

Finance

"The Relation of Wealth to Economics" may be had without charge by addressing the author, Allison J. Thompson, 1101 Power Avenue, N.E., Cleveland, Ohio. There are three types of wealth —money, property and credit—and each is discussed in turn, with final emphasis on the subject of debt. "Much of the prosperity of today," concludes Mr. Thompson, "is due to the tremendous volume of buying power borrowed from the future to be used for present economic activities; and the repayment of that money may cause serious embarrassment to future generations."

Municipal Administration

"Comparative Statistics, Cities and Villages of Ohio, 1933" is the title of a report issued by the Ohio Bureau of Inspection and Supervision of Public Offices; Jos. T. Tracy, Auditor of State, Chief Inspector and Supervisor; D. O. Heeter, Statistician. The General Code of Ohio requires city auditors and village clerks to file financial reports with the Bureau. The reports for 1933 have been condensed and are presented in comparative form; the comparison is made according to size and on a partial per capita basis. School finances are not dealt with. Education covers only municipal libraries, universities, museums and art galleries. 133 pp. (Apply to the State Bureau of Inspection and Supervision of Public Offices, Columbus, Ohio.)

Infant Mortality

A "Statistical Report of Infant Mortality for 1933 in 985 Cities of the United States" is published by the American Child Health Association in a pamphlet of 30 quarto pages. Every city of 10,000 population and over, since the Birth and Death Registration Areas now correspond with the entire area of continental United States. Confining the 1933 data to the same 943 cities reported in the 1932 rate, the 1933 rate is 55.9, which is .9 lower than that for the preceding year. This is the lowest rate ever recorded in the history of the country. We are reminded by the report that the maintenance of this rate or its further reduction demands continued effective medical and public health effort. (Apply to the Association, 50 W. 50th St., New York.)

Other Reports Received

DALLAS, TEXAS.—City Manager John N. Edy's report on General Budget for fiscal year, 1934-35. 210 mimeographed sheets.

HINTON, W. VA.—City Manager Hume K. Nowlan's report on operation of the city by comparison of 1910, 1920 and 1934 costs. 5 mimeographed sheets. Drawings.

MIAMI, FLA.—Annual Report, Department of Public Service, fiscal year ending June 30, 1934. 50 mimeographed sheets.

NEWARK, N. J.—Annual Report, Auditor of Accounts, 1933. 249 pp.

NEW JERSEY.—New Jersey Taxpayers Association: A study of the Operation of Civil Service in New Jersey. 22 mimeographed sheets.

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

OCTOBER 10-12.—HASTINGS, NEBR. (500)
League of Nebraska Municipalities. Annual meeting. Secretary-Treasurer, C. E. Beals, 407 East 12th Street, Crete, Nebr.

OCTOBER 10-11.—WISCONSIN RAPIDS, WIS.
Wisconsin Chiefs of Police Association. Annual meeting. Secretary, R. H. McCarty, Kaukauna, Wis.

OCTOBER 11-12.—BUFFALO, N. Y.
American Water Works Association—New York Section. Fall meeting. Secretary, R. K. Blanchard, Care Neptune Meter Co., 40 East 42d Street, New York.

OCTOBER 13.—WASHINGTON, D. C.
National Association of Housing Officials. Secretary, Coleman Woodbury, 850 East 58th Street, Chicago, Ill.

OCTOBER 15-17.—ST. LOUIS, MO. (300)
International City Managers' Association. Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

OCTOBER 15-16.—CARTHAGE, MO. (100)
Missouri Water and Sewerage Conference. Annual conference. Secretary-Treasurer, H. M. Bosch, Jefferson City, Mo.

OCTOBER 15.—PROVIDENCE, R. I.
New England Sewage Works Association. Annual meeting. Secretary, F. W. Gilcreas, State Department of Health, Division of Chemistry and Research, New Scotland Avenue, Albany, N. Y.

OCTOBER 15-18.—WACO, TEXAS. (350)
Southwest Water Works Association. Annual convention. Secretary-Treasurer, Lewis A. Quigley, Fort Worth, Texas.

OCTOBER 18-20.—KNOXVILLE, TENN. (200)
American Forestry Association. Annual meeting. Executive Secretary, Ovid Butler, 1727 K Street, N. W., Washington, D. C.

OCTOBER 18-20.—SPRINGFIELD, ILL. (350)
Illinois Municipal League. Annual convention. Secretary, A. D. McLarty, 500 East Capitol Avenue, Springfield, Ill.

OCTOBER 20-22.—CINCINNATI, OHIO. (50)
Conference of State Sanitary Engineers. Annual meeting. Secretary-Treasurer, R. E. Tarbett, U. S. Public Health Service, Washington, D. C.

OCTOBER 21-24.—CINCINNATI, OHIO. (300)
National Association of Commercial Organization Secretaries. Annual convention. (Netherland-Plaza Hotel.) Secretary-Treasurer, Glen B. Eastburn, Chamber of Commerce, Omaha, Nebr.

OCTOBER 22-24.—TOPEKA, KANS.
League of Kansas Municipalities. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

OCTOBER 21.—ST. LOUIS, MO.
American City Planning Institute. Secretary, Flavel Shurtleff, 130 East 22d Street, New York.

OCTOBER 22-24.—ST. LOUIS, MO.; and
OCTOBER 25.—COLUMBIA, MO.
National Conference on City Planning. American Civic Association, Inc. Joint meeting. (Hotel Chase.) Secretary of the Conference, Flavel Shurtleff, 130 East 22d Street, New York. Secretary of the Association, Miss Harlean James, 901 Union Trust Bldg., Washington, D. C.

OCTOBER 24-27.—LONG BEACH, CALIF. (600)
American Water Works Association.—California Section. Annual convention. 207 South Broadway, Los Angeles, Calif. Secretary, J. E. Phillips.

OCTOBER 29-31.—ATLANTIC CITY, N. J.
Pennsylvania Water Works Association. Annual meeting. Secretary, Dr. F. Herbert Snow, 327 Telegraph Building, Harrisburg, Pa.

NOVEMBER 8-10.—CORAL GABLES, FLA. (300)
Florida League of Municipalities. Annual convention. Secretary, E. P. Owen, Jr., 1709 Barnett National Bank Building, Jacksonville, Fla.

NOVEMBER 8-10.—OMAHA, NEBR.
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

NOVEMBER 12-15.—SANTE FE, N. MEX. (350)
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1222 National Press Building, Washington, D. C.

NOVEMBER 15-16.—ASBURY PARK, N. J. (500)
New Jersey State League of Municipalities. Annual convention. Executive Secretary, S. S. Kenworthy, Trenton Trust Building, Trenton, N. J.

NOVEMBER 16-19.—WASHINGTON, D. C. (400)
American Country Life Association. Conference on National Planning and Rural Life. Executive Secretary, Benson Y. Landis, 105 East 22d Street, New York.

NOVEMBER 16-17.—ASBURY PARK, N. J. (400)
New Jersey Health and Sanitary Association. Annual meeting. (Hotel Berkeley-Carteret.) Secretary, Dr. Edward Guion, Box 418, Atlantic City, N. J.

NOVEMBER 21-23.—CALGARY, ALTA. (260)
Alberta Association of Municipal Districts. Annual convention. Secretary, E. Pinchbeck, Spruce Grove, Alta.

NOVEMBER 26-27.—PITTSBURGH, PA.
National Municipal League. Annual convention. Secretary, Howard P. Jones, 309 East 34th Street, New York.

NOVEMBER 26-27.—PITTSBURGH, PA.
National Association of Civic Secretaries. Joint meeting with the National Municipal League. Secretary, Miss H. Marie Dermitt, Pittsburgh, Pa.

DECEMBER 4-6.—WINNIPEG, MAN. (400)
Union of Manitoba Municipalities. Annual convention. Secretary, John Spalding, Miniota, Man.

JANUARY 16-18.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 22-25.—WASHINGTON, D. C.
American Road Builders' Association. Convention and exhibit. (Willard Hotel.) Engineer-Director, Charles M. Upham, 938 National Press Building, Washington, D. C.

MAY 6-10.—CINCINNATI, OHIO.
American Water Works Association. Annual convention. (Hotel Netherland Plaza.) Secretary, Beekman C. Little, 29 West 39th Street, New York.

JUNE.—PRAGUE, CZECHOSLOVAKIA.
International Housing Association. Congress. General Secretary, Prof. Franz Schuster, Hansa Allee 27, Frankfort a/M, Germany.

JUNE 24-29.—PARIS, FRANCE. (1,000)
International Chamber of Commerce. Biennial congress. Manager of the American Section, John P. Gregg, Connecticut Avenue and H Street N. W., Washington, D. C.

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Every gallon of water you produce costs a definite amount in dollars and cents. And unsuspected leaks and losses in the lines, like a hole in the pocket, let the nickels, dimes and dollars roll away before you know it.

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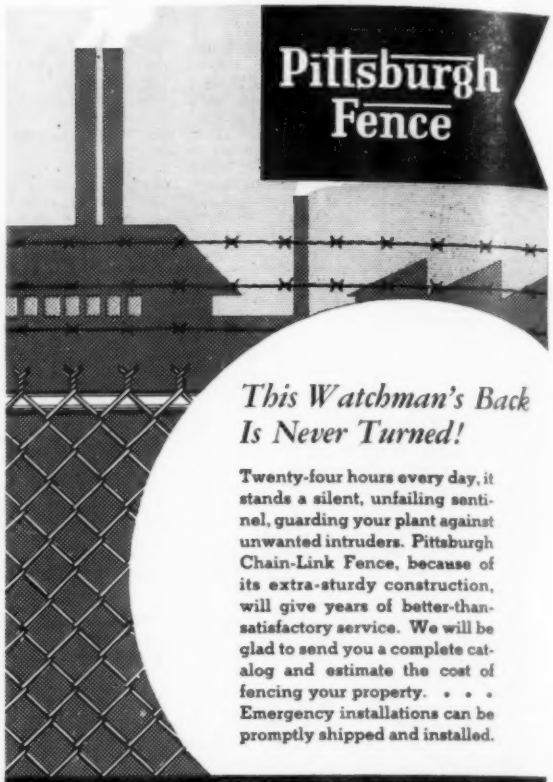

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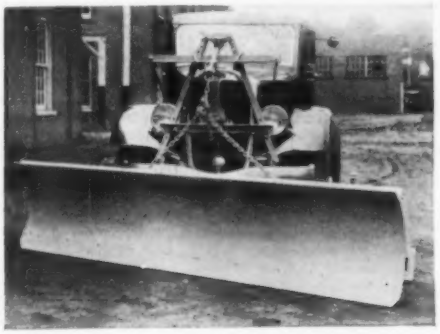

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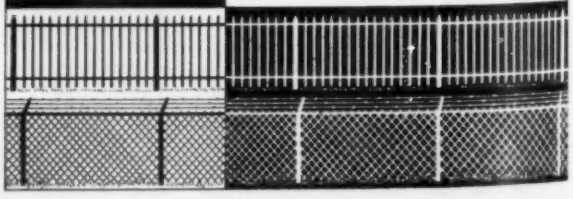


NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

THE DeLAVAL-IMO PORTABLE ROTARY PUMP

A Portable Rotary Pumping Unit

A high-speed rotary displacement pump which has made possible the compact and comparatively light-weight transportable gasoline-engine-driven unit has been announced by the De Laval Steam Turbine Co., Trenton, N. J., and is known as the De Laval-IMO pump. Driven at approximately 1,675 rpm by a 60-horsepower gasoline engine, this pump delivers 90 gallons per minute against 495 pounds per square inch pressure, with a suction lift equivalent to 14 inches of mercury. The pump itself weighs only 398 pounds, and the complete unit with engine weighs about 2,000 pounds.

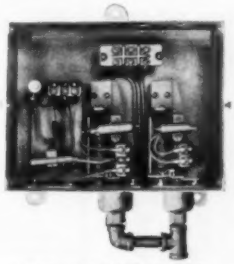
The pump has only three working parts, a central power rotor and two sealing rotors, which mesh in such a manner that the liquid is carried through, as by a continuously acting piston, without shock or pulsation. There are no timing gears or separate bearings, and but one stuffing box, which is subjected to suction pressure only. The rotating parts are in complete rotational balance and, except for suction pressure against the area of the driving spindle at the stuffing box, are also in hydraulic balance axially as well.

An Automatic Pump Controller for Elevated Tank Systems

An automatic pump controller brought out by the Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has been designed for the purpose of maintaining water in an elevated tank or standpipe between maximum and minimum levels. Since pressure at the pump varies directly with the elevation of the liquid in the tank, the pressure type is the simplest kind of controller.

All the essential elements of this controller, including pressure units, snubbers, relays, etc., are mounted in a compact steel cabinet. Piping connections are provided externally for pressure line, and knockouts in the top plate of the cabinet for electrical connections. The cover, top and bottom plates of the cabinet are removable, and all of the equipment is attached to the bottom plate by brackets and is removed from the cabinet with the bottom plate, thus providing maximum accessibility.

When the pump starts, it must set the



THE MINNEAPOLIS-HONEYWELL AUTOMATIC PUMP CONTROLLER

liquid in the main in motion. Likewise, when the pump stops, the moving mass of liquid must be stopped. These conditions set up surges which are rapid changes in pressure of amounts considerably higher and lower than the stop and start settings of the controller. With an ordinary pressure switch, the pump would start and stop during these periods, hence tend to increase surging.

The Type L 550 automatic pump controller eliminates surging effects on the controller by the use of an electrical snubber or time delay. This takes the place of the ordinarily used air cushion tank or needle valve, but is not subject to the troubles experienced with them.

This controller is made in a range of from 550-1 to -8 for 110- and 220-volt, 60-cycle supply. The controller is installed in a clean, dry place on a wall or other support which is free from vibrations.

Simplicity and dependability are predominating features of this control. All equipment is rugged, reliable and accurate, according to the manufacturer.

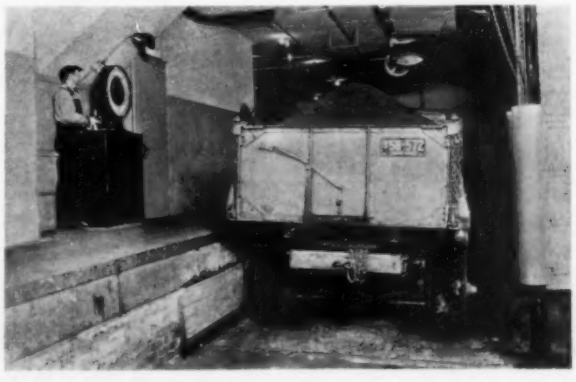
A Scale with Precision Device

The Printweigh is a new Toledo precision device recently brought out by the Toledo Scale Co., Toledo, Ohio. This new scale makes the recording of weights as accurate as the actual weighing, eliminating every possible human error or reading weight, remembering, and recording it. It is electrically operated and may be used with any Toledo automatic dial scale, including those now in use. It may be furnished in any weight capacity from 50 pounds to 50,000 pounds.

In place of the scale indicator, there is a light-weight aluminum-alloy disc which weighs no more than the indicator itself and imposes no burden on the weighing mechanism. The weights are printed from a row of raised figures, located on this disc.

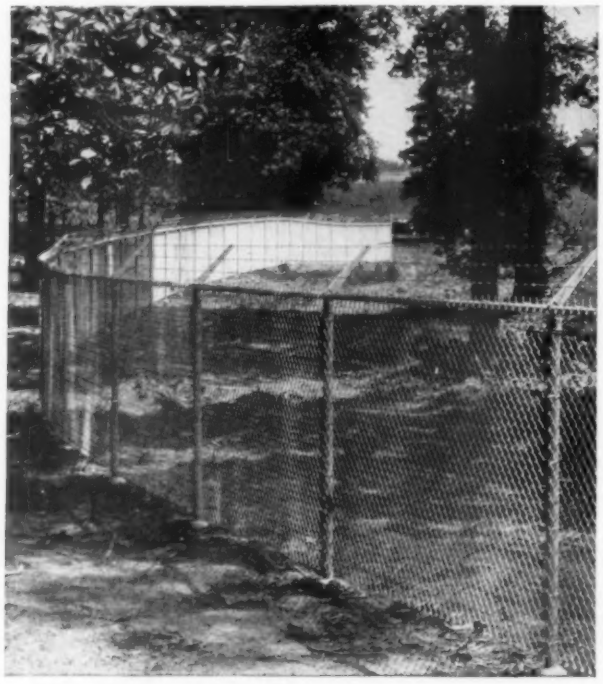
An important auxiliary Printweigh feature is the selective numbering device operated from the keyboard. This device permits the printing of a number or symbol, in addition to the weight, providing positive identification of each weight by customer or account. This feature is particularly valuable wherever compensation is based on specific quantities of materials produced.

Whatever the application of Printweigh, whatever the combination of tickets and strip records used, whatever the most efficient method of identification, the weight which Printweigh records is itself true and accurate.



A HEAVY LOAD OF ROAD MATERIAL ON THE SCALES, WHILE THE OPERATOR PUSHES THE BUTTON OF THE PRINTWEIGH FOR THE BATCH TICKET

PRICES WERE EQUAL *but*



5 NEW FEATURES *Decided* THE FENCE TO BUY

Recently a municipal project required fencing. Quotations were about equal from each of the several bidders. The job went to Continental fence because of 5 new construction features, including heavier and stronger H-section line posts; new top rail coupling, 7 in. long, that fits inside as well as outside; barb wire attached to post arms in angle slot, being automatically locked in position; new tension locking pin that eliminates all bolts and nuts in holding fabric to terminal posts; improved pivot type hinges insure perfect operation of gates without maintenance. Send for a copy of the new Continental fence catalog that shows why Continental fence *offers lower cost per year of service.*

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Manufacturers of Billets, Rods, Wire, Barbed Wire, Nails; Lawn, Chain-Link, Farm and Poultry Fence; Gates; Black, Galvanized, Galvannealed, and Special Coated Sheets; Galvanized Roofing (also "Seal of Quality" Roofing) and Kindred Products.

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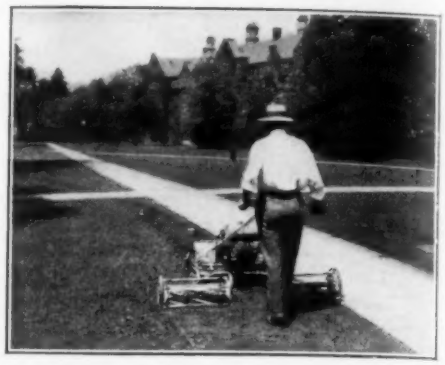

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SUPER POWER!

COLDWELL Super "L-Twin" with sturdy gangs attached is an exceptionally powerful twin-cylinder power lawn mower and roller, combining complete flexibility with large cutting capacity. Three travel speeds.

Width of cut—25 inches to 94 inches.

Dependable performance. Extremely simple and economical to operate.

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All Coldwell Power Lawn Mowers and Rollers, including the motors, are manufactured complete in the Coldwell plant.

The twin-cylinder motor and all parts are designed especially for the job where an abundance of power is required.

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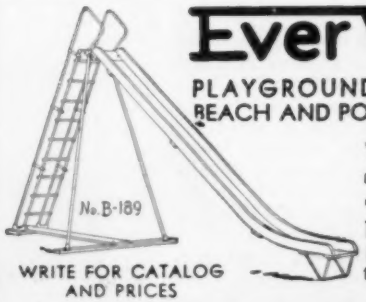

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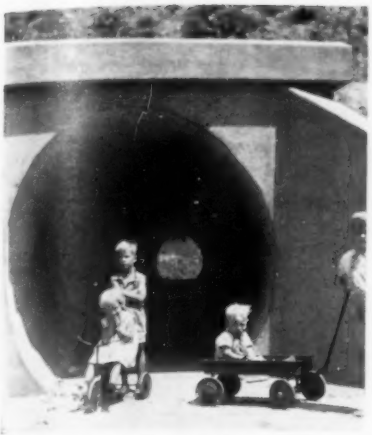


THE ARMCO MULTI PLATE UNDERPASS AT DAVENPORT, IOWA

Placing Pipe Under Railroad Tracks

The attached photograph shows an Armco Multi Plate underpass made by the Armco Culvert Manufacturers Association, Middletown, Ohio, 96 inches high and 84 inches wide by 110 feet long, placed under the Rock Island tracks by Armco tunneling method at the Howell Street crossing in Davenport, Iowa. The pipe has a flat pavement in the bottom, the installation being made as a pedestrian tunnel or underpass primarily because there is a school in the same block. The school children now pass through the tunnel, whereas formerly they had to cross the main-line tracks. This permanent method of construction was jointly adopted by the city and railroad because it gave a better job at less cost than would have been possible by other methods. The installation was made without slowing up railroad traffic.

This installation was made by the Drainage Engineering Co., a subsidiary of the Ingot Iron Railway Products Co.

A New Stainless C'ad Steel

Plykrome, a stainless clad steel produced exclusively by the Illinois Steel Co., Chicago, Ill., has been adopted for corrosion-resisting installations. Notable among the numerous installations of Plykrome made during the past year is that in the Milwaukee sewage disposal plant, where this new stainless clad steel is being fabricated into an 1,800-foot line of pipe ranging from 2 feet to 5 feet in diameter. This is the first instance where Plykrome has been used to reduce the friction of compressed air passing through a pipe. It was found in the preliminary engineering studies for the new sewage plant that an air duct of cast iron would have to be several inches larger in diameter in order to carry the necessary volume of air. This would have necessitated expensive alterations in the buildings.

It was desirable to use a metal which had a low internal coefficient of friction, and would not be subject to corrosion and to a gradual accumulation of scale, rust or dirt, which would tend to increase friction through years of operation. Plykrome met all these requirements. The fabrication of the Plykrome has been in the hands of the Cream City Boiler Co. of Milwaukee, Wis. The Plykrome used is ¼-inch thick with an inside stainless veneer of USS 18-8 stainless steel. The pipe has been fabricated in sections of approximately 54 feet in length. Each section is made of nine plates of Plykrome. Each plate is formed and placed in a special welding clamp for making the longitudinal seam, a plain butt weld made with 18-8 stainless steel electrodes on the inside and with heavily coated mild steel electrodes for the outside. Nine of the plate shells thus formed are welded together to make the 54-foot sections of pipe. The circumferential joints are butt welds made after the plates had been sheared square, and placed with a 3/32-inch gap between edges. About 1,325 feet of the pipe is 5 feet in diameter, and the rest ranges from 24-inch to 48-inch. The entire project requires approximately 315,000 pounds of Plykrome, the largest single installation of stainless clad steel ever made.

ONE OF THE 54-FOOT SECTIONS OF PIPE FOR THE MILWAUKEE SEWAGE DISPOSAL PLANT

Michigan Alkali Moves Sales Department

Michigan Alkali Co., New York City, has announced that after September 1 its general sales department will be located at 60 East 42nd Street.

Klauder to Make Surveys in Port Jervis, N. Y.

The office of Louis T. Klauder and Associates, Philadelphia, Pa., has been retained by the City Council of Port Jervis, N. Y., to make a municipal light and power survey to ascertain the possibilities of municipally generating power for street-lighting purposes, and ultimately providing for the distribution of municipal power commercially, in accordance with New York State legislation, permitting municipalities to construct and operate local lighting systems in competition with public utilities. Port Jervis was the first American municipality to dedicate a finished sodium lamp installation on ornamental street-lighting standards, thus giving its endorsement.

THE METER MITTEN BEING PLACED AROUND THE METER

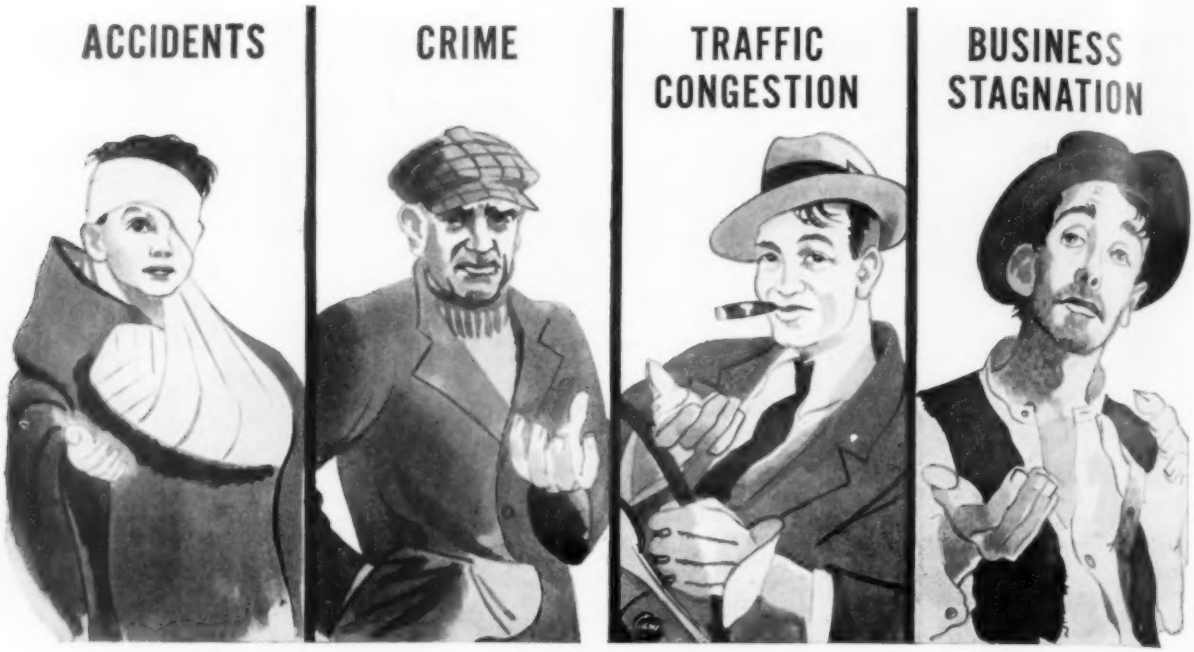
An Arrangement to Prevent the Freezing of Water Meters

A new arrangement for insulating basement water meters to prevent them from freezing, known as a Meter Mitten, has been brought out by The Ford Meter Box Co., Wabash, Ind.

Every winter countless thousands of water meters freeze in basements, and frozen meters mean a considerable expense in changing, repairing and testing the meter. Effective insulation of a water meter will prevent most cases of freezing. If the temperature is low enough and the time long enough, no insulation will prevent freezing but, fortunately, in nearly all basements freezing temperatures prevail only for a few hours and it is only necessary to tide the meter over until the temperature rises above 32 degrees or until there is a flow of water from the main to warm the meter again.

The meter Mitten is scientifically designed to provide effective insulation for the meter, with maximum convenience and sightliness, at a cost that is only a fraction of the expense of a frozen meter. It consists of a formed, flexible jacket made of expanded, galvanized and painted Armco metal, of a size and shape to fit around a standard meter with ample space for the insulating material. It can be slipped around the meter in almost any position without disconnecting the meter from the line. Provided with the jacket is a sack of waterproof mineral wool to pack between the meter and the jacket. This material is a very effective insulating agent and is widely used in refrigerators, heating systems, etc. It is vermin-proof and does not decay.

THE METER MITTEN IN PLACE



PUBLIC, *please* PAY!

Every year the public pays a bill for traffic accidents estimated at $2,500,000,000. Despite less traffic, 40% of these accidents occur at night... The annual loss for burglary and theft is close to $250,000,000. While the losses due to traffic congestion and business stagnation caused by poor lighting cannot be directly estimated, they probably run to enormous figures. ¶ Does it pay? Better street lighting alone could save the American Public $275,000,000 a year. Police Radio can help stamp out expensive crime. Up-to-date traffic control relieves costly traffic congestion. ¶ Graybar can help you with all of these three phases of public safety and public economics. It can advise you on difficult technical matters. And it can supply you with efficient, up-to-date, *quality* equipment. Write for information.

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THE BARCO PORTABLE GASOLINE HAMMER BEING USED IN CONCRETE BREAKING

A New Portable Gasoline Hammer

A new portable gasoline hammer has recently been brought out by the Barco Manufacturing Co., 1801-1815 Winnemac Avenue, Chicago, Ill., which reduces hammer operating costs. The Barco hammer is an air-cooled, two-cycle, single-cylinder, hard-hitting gasoline-driven, ruggedly built unit, that strikes from 1,200 to 1500 blows per minute and will accommodate any standard 1⅛-inch hex shank tool. It uses low-test gasoline, and lubrication is taken care of by mixing oil with gasoline and pouring it in the gas tank. The normal consumption is but one quart of the mixture per operating hour. No mechanic is required; it is a one-man machine and can be quickly dismantled and serviced without assistance. The machine is started by pushing down on the starting plunger at the top of the cylinder, and the free-floating steel piston acts as the hammer.

There is no necessity for blocking traffic, since the one operator and the machine require but a very small amount of space. It can be easily transported in a small business or pleasure car. There is nothing in it to freeze, and it is just as effective in winter as in summer. If trouble should develop, it can be quickly traced and proved. Some of the uses to which this machine has been put are breaking concrete, backfill tamping, digging frozen ground, general demolition purposes, prospecting, rock breaking, shallow drilling and also sheeting driving.

Aluminum Paint—Its Uses and Application

A booklet of 61 pages entitled "Aluminum Paint—Its Uses and Application" has been issued by the Aluminum Company of America, Gulf Building, Pittsburgh, Pa. The book is replete with information and illustrations on the uses of aluminum paint in the industrial fields.

A part of the book is devoted to aluminum paint for state, county and municipal uses and explains the several reasons why aluminum paint, made with Alcoa Albron, has been written into Standard specifications for municipal property. In the first place, this metallic paint makes metal or wood surfaces gleam with a rich "silvery" luster which endures through long and severe weather changes. Civic pride finds full expression in the coat of metal protection which is seen on bridges, lamp-posts, flagpoles, traffic signals, fire hydrants, and many types of structures in public parks. Architects have specified aluminum paint for bridges, approving the ability of this paint to harmonize steel members with concrete.

Beauty, however, is not the sole advantage sought by municipalities and civic organizations. Cost must be right and protection must be thorough, and aluminum paint meets these requirements. For hiding power, coverage, resistance to moisture, smoke and fumes, this metallic paint meets all the requirements, and the price is no more than for other good paints. Cities have used this paint for water tanks, towers, gas holders and plants, and owners of private residences have used it for trellises, benches, fences and other properties.

Yeomans Holds Elections

D. W. Burgoon, Vice-President and General Manager of Yeomans Brothers Co., Chicago, Ill., was recently elected to the Board of Directors, and H. T. Jeffrey was elected Secretary in addition to his office of Sales Manager. This company specializes in sewage and drainage pumps.

THREE BRIDGES OVER ALLEGHENY RIVER PROTECTED WITH ALUMINUM PAINT

Rotary Traffic Circle
Hudson, Mass.

A SMALL CITY MAKES ITS BUSINESS SECTION MORE ATTRACTIVE

HUDSON, MASS., *Uses Gleason-Tiebout Glassware in Lighting Wood Square*

Form 123 globe used on the Wood Square Installation

HERE is an excellent example of how a small lighting project increased the attractiveness of Hudson's business section and at the same time assured the maximum of night-driving safety in a city of 9000 population.

On this installation, Gleason-Tiebout glassware was specified. Alabaster rippled globes give an even, glareless distribution of light over the streets and buildings near the square.

Regardless of the size or the nature of the installation, scientifically designed glassware is essential for correct illumination. It enhances the beauty of the lighting equipment; it helps to provide greater protection and so gives a high return on the investment by decreasing accidents and crime.

Gleason-Tiebout makes glassware to meet the exacting specifications of General Electric engineers. These engineers will be glad to assist you in planning installations that will meet every requirement.

GT-31

GLEASON-TIEBOUT GLASS COMPANY

99 COMMERCIAL STREET, BROOKLYN, N. Y.

During October we hope you will remember to mention THE AMERICAN CITY

Outdoor Lighting

A Section of *The American City*
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Fatalities Correlated with Traffic and Lighting for 60 Cities

By **R. E. SIMPSON**
Illuminating Engineer,
National Bureau of Casualty and Surety Underwriters

THE National Bureau of Casualty and Surety Underwriters has been conducting a three years' survey on street-lighting costs and automobile fatalities in a number of American cities, to find out what effect, if any, the varying levels of street illumination as reflected by the costs had on the automobile fatality rate.

There are many variables which enter into the cost of street lighting, such as density of population, rates for electric current and servicing, capital investment on street-lighting equipment, so that costs alone do not constitute an accurate gage by which to measure and compare the efficacy of street lighting in different cities. However, when we deal with a large number of cities ranging from 100,000 to several million inhabitants, these variables tend to equalize.

Even so, it was thought desirable to eliminate some of these variables by trying to correlate the automobile fatalities with traffic flow and street illumination levels. To do this it was first necessary to know the total number of automobile fatalities, the hour of occurrence and the location. With this information at hand, it was merely a matter of analyzing it to determine those streets on which fatalities were most frequent both by day and by night. These streets, as might be expected, almost invariably proved to be main thoroughfares and embraced both business and residential sections. It was then necessary to get traffic counts to determine the automobile traffic flow and the number of pedestrians crossing the street, and finally to obtain the street-lighting level in lumens per lineal foot.

The police departments furnished the total number of fatalities by hour and location in 60 American cities. There were 5,527 automobile fatalities in these cities in 1933, and of this number 2,295, or 41 per cent, occurred during the day, and 3,232, or 59 per cent, during the night. From this it will be seen that the night fatalities were 44 per cent greater than the day fatalities—within 0.5 per cent of the figure for the entire country.

Through the cooperation of the police departments, the electric light and power companies, National Safety Council locals, and the opportune aid of Federal authorities in CWA activities, traffic counts and street-lighting data were available from 30 cities, with definite promise of more to follow. From these data we were able to correlate the three factors in the table.

The Street Lighting Committee of the Illuminating Engineering Society has published a Code on Street Lighting in which streets are classified according to the traffic they bear. By this Code heavy-traffic thoroughfares usually carry a maximum of more than 1,500 vehicles per hour in both directions during the lighting period; medium-traffic thoroughfares a maximum of 800 to 1,200 vehicles per hour: and light-traffic thoroughfares not more than 500 vehicles per hour. In the table these thoroughfares are denoted in the traffic column by the letters A, B and C, respectively.

The Code also prescribes the size and general type of street-lighting equipment necessary to provide the minimum amount of illumination acceptable for each class of street. In the light of the returns so far, it seemed desirable to follow the Code specifications as nearly as possible, but to reduce these specifications to a common unit of lumens per lineal foot. We therefore have classified the street lighting as Grade A when the equipment provides 80 or more lumens; Grade B, 40 to 80 lumens; Grade C, 25 to 40 lumens; and Grade D less than 25 lumens per lineal foot. Similarly, traffic conditions have been reduced to the common unit of million vehicle-miles (mvm per year).

Some of the outstanding features of this tabulation are: the bulk of the experience comes from streets in the heavy-traffic class; the average day fatality rate per mvm in this class is 0.25, while the night fatality rate increases as the grade of street lighting goes down. Specifically, the night fatality rate per mvm on these heavy-traffic streets with Grade A lighting is 7 times higher, with Grade B lighting 9 times higher, with Grade C lighting 13 times higher, and with Grade

FATALITY RATE PER MILLION VEHICLE-MILES

Traffic	Lighting	MVM Day	MVM Night	Fatalities Day	Fatalities Night	Fatality Rate Per MVM Day	Fatality Rate Per MVM Night
A	A	94.4	27.4	25	48	.26	1.75
A	B	222.0	62.4	57	138	.25	2.21
A	C	29.5	6.5	6	22	.20	3.34
A	D	57.1	12.2	11	44	.19	3.66
B	A	8.5	3.0	4	5	.47	1.66
B	B	54.1	15.0	28	54	.51	3.60
B	D	39.9	10.2	10	51	.25	5.00
C	B	4.5	1.1	2	7	.44	6.24
C	C	4.6	.6	2	5	.43	8.19
C	D	9.9	3.1	5	19	.50	6.11
Composite		524.5	141.5	150	393	.28	2.77

60,000 lbs.

and nothing happened!

Here is a test that proves beyond question the unusual durability and desirability of Westinghouse Hollowspun Standards.

An iron hammer, suspended like a giant pendulum, was swung from increasing distances until the Hollowspun Standard received the full impact of *60,000 pounds* at automobile fender height . . . *nothing happened!*

Resistance to impact is but one of the outstanding superiorities of Hollowspun Standards. They are unsurpassed in strength, beauty and efficiency.

Westinghouse Standards exemplify the high quality of all Westinghouse Street Lighting Equipment. There is Westinghouse Equipment to meet every street lighting need.

At its own expense, Westinghouse will study your problem and submit a scientific street lighting program to correct existing lighting conditions.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
Lighting Division, Cleveland Works, Edgewater Park, Cleveland, O.

Westinghouse

L I G H T I N G

D lighting 16 times higher, than the day fatality rate. Again, as in the case where costs alone were considered, the fatality rate increases as the level of street illumination decreases, but here we have taken into account part of the traffic exposure —the pedestrian exposure not yet included.

A somewhat surprising feature is that on Class B and C streets the day fatality rate is almost double the day rate on Class A streets—just contrary to what might be expected. This may be accounted for in part by the fact that these streets are consistently narrower by 8 to 20 feet than Grade A streets. With parking on one or both sides, there is less space and time for maneuvering in emergencies, and there is the further probability that the speed does not conform to the conditions.

Another interesting point comes to light by segregating the fatalities occurring between midnight and dawn (dawn is here considered as beginning one half-hour before sunrise) and comparing this with the total number occurring during the hours of darkness. As already stated, there were 3,232 night fatalities, and of this number 747, or 23 per cent, occurred between midnight and dawn. The traffic chart on page 75 shows that approximately 4 per cent of the total 24-hour traffic occurs during this period, from which we may deduce that from midnight to dawn 6 per cent of the night fatalities occur with 1 per cent traffic flow. From personal observation we would say that the uniformly higher speed and the prevalence of trucks on the streets at this time are important factors in making this record. And again, from personal observation the trucks yield little if anything to private cars in the matter of speed.

Efficiencies of Sodium Light and the Equipment

AT perfect efficiency the sodium lamp would produce 668 lumens per watt; in common practice it is producing 40 lumens per watt, having reached 70 lumens in some practical applications, with 300 lumens the theoretical maximum. But a lamp, like any other device, should not be judged in terms of either perfection or eventual possibility, but in terms of its present value as an illuminant as compared with other illuminants. For, as Arthur F. Loewe of the General Electric Company has said: "It is very apparent from the progress made so far that we still have a long way to go in the production of practical efficiencies higher than we have today."

Improvement will probably come in the further simplification of equipment for generating and distributing the light. The light itself—which is what cities buy and motorists use upon the rural highways—is essentially one color and close to that portion of the spectrum that furnishes the greatest retinal sensitivity, and it is believed that this present color quality of light will remain as it now is, owing to the inherent characteristics of sodium vapor.

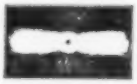
In the sodium lamp itself and the reflecting equipment accompanying it, research engineers have gathered together the major developments. With the use of the new aluminum surfaces recently developed, which approach the reflecting characteristics of silvered glass, and the accumulated knowledge of illuminating engineers over a great period of years, little appears possible at the present writing for the development of more efficiently utilizing light and directing it properly upon road surfaces. The greatest possibility for further improvement will probably be in increasing the efficiency of the light source itself, simplifying the method of producing, regulating and maintaining the arc, and standardization of manfacturing methods, which, in the experience of the incandescent lamp manufactuers, has always had a beneficial bearing upon the life and light performance of the lamp itself.

The simplification of the equipment and its production by modern machine methods, along with the greater acceptance and purchase in greater numbers will undoubtedly have a bearing upon the rapid reduction of the equipment first cost. With the renewal parts, the lamp itself upon factory production basis not only in methods but in quantities, and its potential increase in efficiency, there should also be a reduction in operating costs for the future.

The sodium lamp, with its practical monochromatic characteristics, will be most useful on the rural heavily traveled highway and perhaps in some very special inspection processes where color discrimination is not a factor. The lamp and the highway luminary designed especially for it, are at present too expensive to warrant widespread substitution for incandescent lighting where cost is the major consideration. But the degree of simplification and production already reached provide for reasonable cost for demonstration units and for more regular installations.

10,000-LUMEN SODIUM-VAPOR-LAMPS AT A HEAVY-TRAFFIC Y

A Holophane Refractor for wide streets gives this type of light distribution. Units at curb — closely spaced.



A Highway Refractor produces a long, narrow ribbon of light.

For wider spacing, and longer reach of light, there is another Holophane Refractor.

For intersections there is a Refractor which produces a separate beam for each roadway.

Holophane Refractors shape the Light to the Street

THERE is a scientifically appropriate Holophane Refractor for every requirement of street and highway lighting. Holophane Refractors are outstandingly economical. They give more light at the same cost—or the same amount of light at a saving.

Holophane Trade Mark

For engineering service address Holophane Co., Inc., 342 Madison Ave., New York. Offices also in Toronto. Works, Newark, Ohio.

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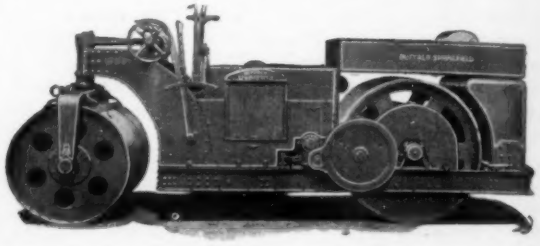

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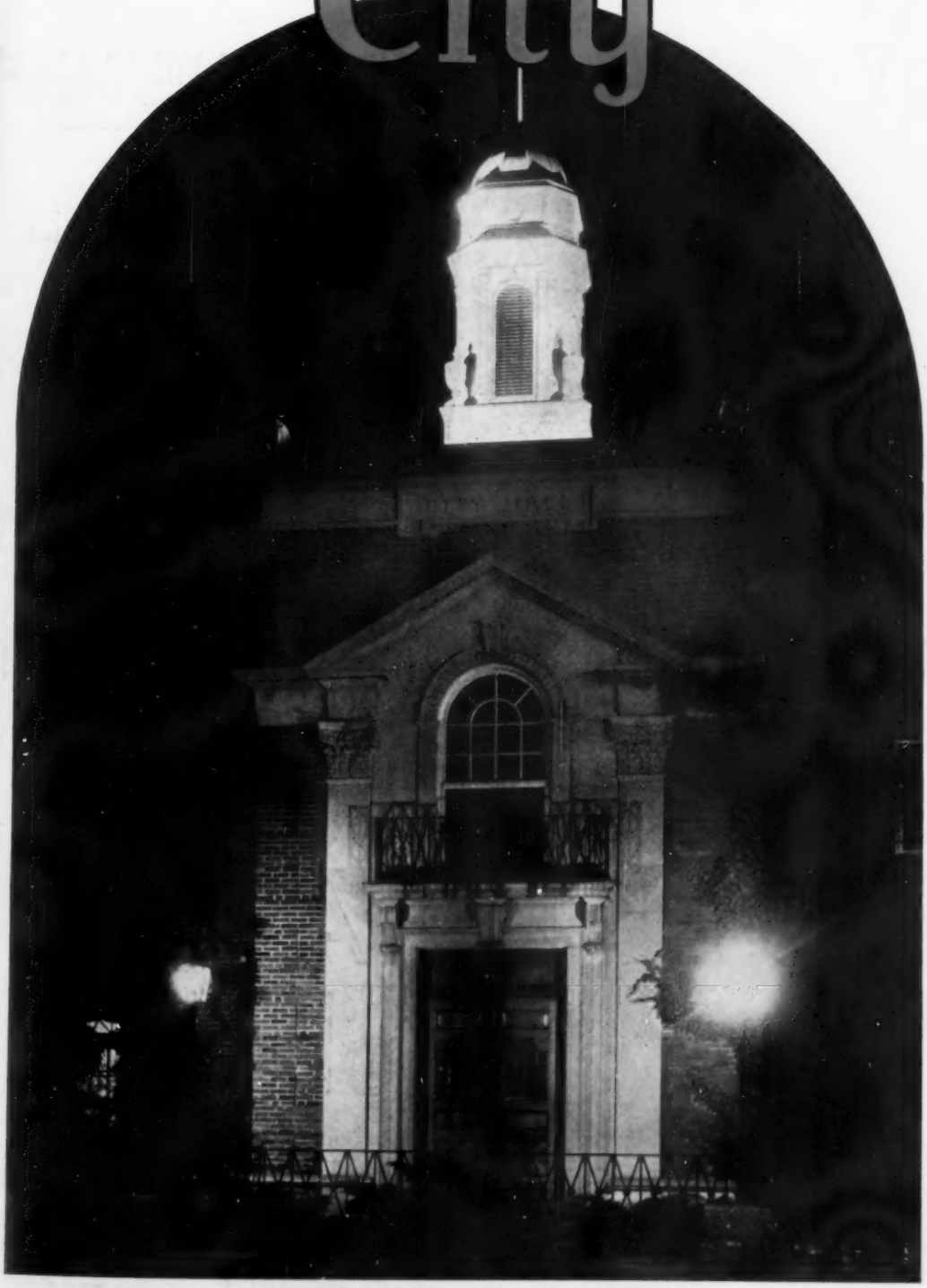

Visitors to Clayton, Missouri, Are Impressed by the Night-Time Attractiveness of the City Hall, as Brought Out by the Illumination

See also page 52 of this issue